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June 24, 1998

Amy Theisen
Bell Museum of Natural History
10 Church Street, SE
Minneapolis, MN 55455

Dear Amy:

Enclosed you will find my evaluation report for Minnesota IDEALS, which represents the final product of our 1997-98 evaluation study. The data we collected have many good things to say about Minnesota IDEALS, and in the report I offer some recommendations that I hope are helpful as you work to make the program even better.

As you know I will be moving soon and am unable to continue my work with you. If you are interested in further evaluation studies of Minnesota IDEALS, please contact Doug Huffman at the Center for Applied Research and Educational Improvement (625-5337).

It was a real pleasure working with you, Elsie, Katie, and the rest of the Bell Museum staff. I wish you and Minnesota IDEALS good luck. Feel free to contact me at my home (338-4396) if you have any questions.

Sincerely,

Steve Fifield
Education Specialist

Evaluation Report

Minnesota IDEALS 1997-98

Bell Museum of Natural History
University of Minnesota–Twin Cities

June 22, 1998

Prepared by:

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I. Introduction

This is a program evaluation of Minnesota IDEALS during the 1997-98 school year. This document is divided into two sections. In the main body of the report I describe the evaluation design, summarize the results, and offer recommendations. The teacher surveys, data tables, and respondents' written comments that are referred to in the main body of the report are collected in the appendix. These are organized according to the workshop or other event in which they were used, with the survey instrument first, followed by the survey results.

II. Minnesota IDEALS: Mission statement, goals, and programs

According to its mission statement, "Minnesota IDEALS provides standards-based innovative professional development for teachers and distance learning science programs for students grades 4-9 throughout the state of Minnesota." This mission statement is reflected in the following program goals:

1. To provide Minnesota educators and students access to scientists and science as it is happening.
2. To provide equal access to Minnesota IDEALS programs for students and teachers located throughout Minnesota.
3. To provide Minnesota educators with innovative and interdisciplinary science-based classroom materials and teaching techniques.
4. To assist educators in meeting the Minnesota Graduation Standards and national education standards.
5. To model a broad spectrum of scientists and science-related careers without bias.
6. To excite, engage, and encourage students in science, nature, and technology.

The three major programmatic components of Minnesota IDEALS are the JASON Project, Bell Live!, and Bell minikits.

III. Evaluation design

This report focuses on the following aspects of Minnesota IDEALS during the 1997-98 school year:

Mentor teachers. Sixteen Minnesota teachers, 13 from outside the Twin Cities area, were selected to serve as regional contacts for teachers with questions about Minnesota IDEALS programs and to help facilitate teacher workshops in their regions during the 1997-98 school year. A mentor teacher training workshop was held at the Bell Museum on October 29, 1997.

Teacher workshops. Twenty-three day-long teacher workshops were held at sites across Minnesota (Table 1). The workshops reviewed the components of Minnesota IDEALS and emphasized the written curriculum and hands-on lessons of the JASON Project. Teachers received the JASON Project curriculum at these workshops. Many of the workshops used interactive-television (I-TV) to deliver some of the instruction.

Table 1. Locations and dates of the Minnesota IDEALS teacher workshops.

Location	Date
Marshall (I-TV)	November 7, 1997
Morris (I-TV)	November 7, 1997
Worthington (I-TV)	November 7, 1997
U of MN–St. Paul	November 11, 1997
Mankato (I-TV)	November 14, 1997
Rochester (I-TV)	November 14, 1997
Winona (I-TV)	November 14, 1997
U of MN–Bell Museum	November 15, 1997
Bemidji (I-TV)	November 25, 1997
Crookston (I-TV)	November 25, 1997
Moorhead (I-TV)	November 25, 1997
U of MN–St. Paul	December 4, 1997
Duluth (I-TV)	December 6, 1997
Hibbing (I-TV)	December 4, 1997
Alexandria (I-TV)	December 12, 1997
Brainerd (I-TV)	December 12, 1997
Pine City (I-TV)	December 12, 1997
St. Cloud (I-TV)	December 12, 1997
U of MN–St. Paul	December 13, 1997
U of MN–St. Paul	January 8, 1998
U of MN–Mpls.	January 21, 1998
Morris (I-TV)	January 21, 1998
Staples	February 18, 1998

Teachers' use and perceptions of Minnesota IDEALS. The workshop participants were surveyed at the end of the school year concerning their use of the JASON Project curriculum and other components of Minnesota IDEALS.

JASON Project broadcasts at the Bell Museum. On March 16-27, 1998, the Bell Museum was a downlink site (PIN site) for live broadcasts of JASON IX: *Oceans of Earth and Beyond*. Events at the Bell Museum included the live broadcasts, tours of a JASON Project exhibit produced by students, demonstration of an remotely-operated vehicle (ROV) at the University's Aquatic Center, and guest speakers.

Teachers brought students to the Bell Museum for these activities.

Working with the Minnesota IDEALS staff and advisory group, the following questions were developed to guide this evaluation:

1. What are the demographic characteristics of the teachers that use components of Minnesota IDEALS?
2. What are teachers' perceptions of the quality of the Minnesota IDEALS teacher workshops?
3. What components of Minnesota IDEALS do teachers utilize most and what are their perceptions of the quality of what they use?
4. What barriers to the successful implementation of the curriculum associated with Minnesota IDEALS do teachers identify?
5. How do mentor teachers describe their experiences in the workshops and mentor teacher program?

Data were collected primarily from written surveys of teachers. Teachers participating in the mentor teacher workshops, Minnesota IDEALS workshops, and JASON at the Bell Museum were asked to complete surveys. Near the end of the school year surveys were mailed to all 507 teachers that attended Minnesota IDEALS workshops. The mentor teachers were also asked to keep journals of their experiences using the JASON Project curriculum and assisting other teachers with the curriculum. The aspects of Minnesota IDEALS that were evaluated, the means of evaluation, and the instrument return rates are in Table 2. The survey instruments, results, and the guidelines for the mentor teacher journals are in the appendix. In addition to the written surveys, this report is based on my observations of the mentor teacher workshop, one Minnesota IDEALS teacher workshop, several observations of the JASON broadcasts at the Bell Museum, and occasional attendance at Minnesota IDEALS staff and advisory group meetings.

Table 2. Aspects of Minnesota IDEALS that were evaluated, the instruments used, and the return rates for the instruments.

Program aspect	Evaluation instrument	% of participants returning the instrument
Mentor teacher workshop	Mentor teacher surveys, pre- and post-workshop*	pre-workshop survey: 13/16 = 81% post-workshop survey: 14/16 = 87%
Mentor teachers' experiences	Mentor teacher journals	13/16 = 81%
MN IDEALS teacher workshops	MN IDEALS teacher workshop survey	298/507 = 59%
JASON broadcasts at the Bell Museum	JASON at the Bell teacher survey	34/130 = 26%
Teachers' use and perceptions of Minnesota IDEALS	Year-end teacher survey	126/507 = 25%

*The mentor teacher surveys were developed by Elsie Rivard.

IV. Summary of results

Attendance at workshops and instrument return rates

Thirteen of the 16 mentor teachers returned the pre-workshop survey and 14 returned the post-workshop survey (Table 2). Thirteen mentor teachers submitted journals describing their experiences. Five hundred and seven teachers from approximately 107 public school districts and 28 private or homeschools attended the 23 Minnesota IDEALS workshops. Two hundred and ninety-eight of the participants returned surveys at the end of the workshops. All of the workshop participants were mailed year-end surveys, and 126 of these were returned from teachers in approximately 53 public school districts and 30 private or homeschools. One hundred and thirty teachers brought their students to JASON at the Bell Museum and 34 surveys were collected from those teachers.

Evaluation questions

QUESTION 1: What are the demographic characteristics of the teachers that use components of Minnesota IDEALS?

This question was addressed by the teacher workshop and year-end surveys. Over 65% of the teacher workshop survey respondents were between 30 and 50 years-old, 20% were younger than 30 years-old, and 13% were more than 50 years-old (Table TW-3). A very similar age distribution held for the year-end survey (Table YE-2). Twenty-seven percent of the respondents to the teacher workshop survey had fewer than 5 years of teaching experience, with the remainder of the respondents evenly spread among 6-10 years, 11-20 years, and 21 or more years of experience (Table TW-4). On the year-end survey, 37% of the respondents had five or fewer years of experience, with an even distribution among the remainder of the categories (Table YE-3)

Over 80% of the respondents to the teacher workshop survey taught grades K-8, and most of these individuals taught the upper grades in this range (Table TW-1). The year-end survey asked for the grades taught in the respondents' buildings. Most of the respondents taught in K-8 buildings, but 20% were in buildings that included secondary grades (Table YE-1). Nearly 55% of the respondents to the teacher workshop survey taught multiple subjects including science, 28% reported teaching only science/math, and less than 5% taught social studies/humanities only (Table TW-2).

QUESTION 2: What are teachers' perceptions of the quality of the Minnesota IDEALS teacher workshops?

The teacher workshop and year-end surveys again contain data relevant to this question. Tables TW-9, 10, and 11 contain the respondents' ratings of the quality of various aspects of the workshops and the curriculum reviewed during the workshops. Table TW-9 suggests that the goals and components of Minnesota IDEALS and the JASON Project were clearly described in the workshops, but 20% of the respondents were unclear how the components of Minnesota IDEALS could be used to meet the Minnesota Graduation Standards. The respondents agreed that the curriculum materials reviewed during the workshop were of high quality, but 39% believed they would have difficulty using some components of the JASON Project because of limited access to computer and video technology (Table TW-10). Table TW-11 suggests that the workshops were perceived as well-organized and worthwhile, but 20% did not feel prepared to use the JASON curriculum based on their experiences in the workshops. This can be compared to the year-end survey, in which 14% of the respondents did not feel they were well prepared to use the JASON curriculum by the workshops, but nearly 85% agreed that they were well prepared by the workshops (YE-4). On the teacher workshop survey, 18% did not

feel they had time during the workshop to share ideas with other teachers, and 37% said they did not learn of an expert in their area that could be invited into their classroom.

Table TW-12 contains respondents' perceptions of their comfort levels (low, medium, high) with various computer applications before the workshops and the effect of the workshops on their comfort levels. Before the workshops the mean comfort ratings are medium for e-mail and basic use of the Internet, but the ratings drop to medium-low for online discussions and databases, computer-based student projects, and constructing a homepage. Across all of the applications, 47-68% of the respondents said the workshop had no effect on their comfort levels, while 17-35% said their comfort levels increased. No one reported being less comfortable with computers as a result of the workshops.

Seventy-six percent of the respondents from interactive-TV workshops rated their interest in the workshops as no different than or greater than traditional workshops (Table TW-16), and 80% agreed or strongly agreed that the interactive-TV segment of the workshop was a satisfactory way to make training available (Table TW-17).

On a scale of poor to excellent the workshops received an overall quality rating of very good (Table TW-14). In written comments on the teacher workshop survey (appendix, pp. 46-47) and on the year-end survey (Table YE-5), the hands-on experiences, the review of the JASON Project curriculum, and the computer sessions were rated as the most helpful aspects of the workshops. Problems with interactive-TV, the poster session, and some parts of the morning session of the workshop were identified as the least helpful, although these criticisms were made by a small number of respondents. Respondents' suggestions for improvements included lengthening the workshops, focusing more on the JASON Project curriculum, and facilitating more sharing of ideas and experiences among the participants.

QUESTION 3: What components of Minnesota IDEALS do teachers use and what are their perceptions of the quality of what they use?

On the year-end survey, respondents were asked to estimate how many teachers in their buildings attended a Minnesota IDEALS teacher workshop and how many teachers in their buildings used some component of the JASON Project curriculum during the year. The respondents reported that they knew of approximately 200 teachers who attended a workshop and 270 who used some component of the JASON Project curriculum. These estimates must of course not be taken as approximations of the state-wide impact of Minnesota IDEALS because they are simply the reports of a relatively small number of teachers who responded to the year-end survey. Also, because of the variability among the numbers reported

by teachers from the same school, I suggest that even as snapshots of a few schools these numbers be viewed as very rough estimates. I have more confidence in the year-end survey respondents' reports of the number of students they taught using the JASON Project curriculum. One hundred-fifteen teachers reported that 5647 of their students used some part of the JASON Project curriculum during the 1997-98 school year.

Table TW-5 gives a picture of how the respondents to the teacher workshop survey define a good science curriculum. When asked to rank various characteristics of a science curriculum in order of importance, the top three characteristics were "teaching problem solving and critical thinking", "exciting students about science", and "using hands-on activities". The frequency with which other characteristics were mentioned fell off sharply after these. It is interesting to note that "meeting the Minnesota Graduation Standards" was selected by only 6.7% of the respondents.

The teacher workshop survey asked respondents to report their use of Bell Museum programs and to rate the quality of the programs (Table TW-6). Thirty percent of the respondents had used the JASON Project, 20% percent had used the Bell Museum tours, 10% had used Bell Live!, and 8% had used the Bell learning kits. All of these programs were rated very good-excellent on a scale of poor to excellent.

Seventy-four percent of the respondents to the teacher workshop survey heard about the workshops through a brochure in the mail or from another teacher (Table TW-7). Approximately half of the respondents had no knowledge of the JASON Project before the 1997-98 school year, with the remainder split evenly between using the JASON Project in the past and being familiar with JASON but never using the curriculum (Table TW-8). Ninety-one percent of the teacher workshop survey respondents expected to use the JASON Project written curriculum during the 1997-98 school year, 85% expected to use the JASON Project website, and 77% expected to view the JASON broadcasts (Table TW-13). Smaller but still significant percentages of the respondents expected to use the Bell Museum website, learning kits, and tours (Table TW-13).

The year-end survey results suggest levels of use similar to what the teachers predicted on the teacher workshop survey. When comparing the teacher workshop survey results and the year-end survey results, however, keep in mind that the year-end survey respondents are self-selected and more likely to have made use of Minnesota IDEALS and to have had positive experiences with what they used. The overall use of Minnesota IDEALS programs by all the teachers who attended the teacher workshops was likely significantly lower than is suggested by the year-end survey results, although how much lower we do not know. With that interpretive caveat, 95% of the year-end survey respondents used the JASON Project written

curriculum, approximately 70% used the JASON Project website, and 60-80% viewed the 1-hour broadcasts by some means (Tables YE-6, 7, and 15). These programs were all rated good-very good on a scale of poor to excellent (Table YE-6). Some teachers obtained the broadcasts by several means, so the following figures total to more than 100%, but they give some sense of the distribution among means of access to the broadcasts. Fifty-one percent of the respondents viewed the JASON broadcasts at the Bell Museum, 10-25% obtained cable or satellite access at a site other than the Bell Museum, 18% viewed videotapes of the broadcasts, and 20% did not view the broadcasts (Table YE-7). The most frequent difficulty that was reported in obtaining the JASON broadcasts concerned the technology needed to access the signal (Table YE-8). The surveys contain written comments describing both successes and failures to cope with this technological obstacle.

Teachers who attended the JASON broadcasts at the Bell Museum (March 16-27, 1998) were asked to complete a survey at the end of their visits. Thirty-four of the 130 teachers returned the survey. Thirty-three of the respondents reported that they brought a total of 2624 students, most of them in grades 5-8 (Table JB-2 & 3). All thirty-four of the student groups viewed a JASON broadcast, 30 heard a guest speaker, 15 attended Mission Discovery at the Aquatic Center, 14 had a museum tour, and 12 saw the JASON exhibit (Table JB-4). The mean rating by the respondents of the quality of the JASON broadcast was very good-excellent. All of the other programs received mean ratings of good-very good. Nineteen of the teachers perceived their students to be highly engaged in the activities of the day, 13 rated their students adequately engaged and two gave no response (Table JB-5). Twenty-four of the teachers perceived the activities as very well organized, six rated them adequately organized, one rated them poorly organized, and three gave no response (Table JB-6). A number of positive comments that were general in nature were made on the surveys. The negative comments and suggestions for changes primarily concerned the organization and scheduling of activities (appendix, pp. 53-54).

Returning to the year-end survey, 60-70% of the respondents used the Internet in their teaching to access the JASON homepage, JASON@school, and for student research projects (Table YE-15). The most common student use of the Internet was to locate information on organisms for reports and posters (Table YE-16). The Minnesota IDEALS website was accessed by 57% of the respondents (Table YE-13), most frequently to find information on teacher and student argonauts from Minnesota (Table YE-14).

Very few of the respondents examined the Bell Museum JASON Project Performance Packages (Tables YE-10 & 11). Ten reported downloading a package from the Minnesota IDEALS website, seven obtained a package by the mail, and one received a package from a friend. Between one and seven respondents examined each of the five packages, all of which received quality ratings of good-very good on

a scale of poor to excellent. In written comments on the Performance Packages and the Minnesota Graduation Standards the respondents asked for more packages, workshops on the packages, and a written guide correlating lessons in the JASON curriculum to the Standards (appendix, pp. 67-68)

Eighteen respondents to the year-end survey reported receiving assistance from a mentor teacher and 52 sought help from the Minnesota IDEALS staff (Table YE-12). Questions for the mentor teachers most often concerned the JASON Project curriculum, while questions for the Minnesota IDEALS staff typically concerned getting access to the JASON broadcasts and other technology-related issues, in addition to advice regarding the curriculum.

Eighty percent of the respondents said they planned to use the JASON Project curriculum next year (Table YE-9). The most common reasons for not using the JASON Project in the future include: i) no or difficult access to the broadcasts, ii) the curriculum is not appropriate for the respondent's grade level, iii) lack of funding, and iv) the JASON Project topic is not compatible with the respondent's curriculum.

At the end of the year-end survey the respondents were asked to make written comments. In the appendix these responses are separated into positive comments, and negative comments and suggestions. The positive comments included thanks to the Minnesota IDEALS staff for the workshops and other support they provided. The JASON Project was praised for its broadcasts and Internet-based components; for motivating students; for its hands-on, inquiry-oriented, and interdisciplinary lessons; and for its compatibility with state and national education standards. The negative comments and suggestions for changes focused on technology problems with both the broadcasts and computers, the need to receive the curriculum and training earlier in the school year, and the time and expense involved in obtaining the supplies needed to teach some of the lessons.

QUESTION 4: What barriers to the successful implementation of the curriculum associated with Minnesota IDEALS do teachers identify?

In the teacher surveys the respondents' descriptions of barriers to successful implementation of the Minnesota IDEALS curriculum focused on the JASON Project curriculum. The problems the respondents described fell into three categories: i) technology, ii) instructional materials and supplies, and iii) teacher development. The technology-related problems concerned obtaining the JASON broadcasts and making use of the Internet-based aspects of the JASON curriculum. On the year-end survey one-third of the respondents reported technical or logistical problems receiving the JASON broadcasts (Table YE-8). Written comments by a number of respondents also tell of failed attempts to receive the broadcasts in their buildings or of the need to travel to other sites to see the broadcasts. On the other hand, some teachers commented on how simple it was to access the broadcasts.

Apparently, substantial differences in technology and know-how produce vastly different experiences for teachers across the state. Similarly some teachers wrote of the great problems they had with the Internet-based aspects of JASON, the JASON@school CD-ROM being particularly troublesome. Others raved about the great resources available on the Web and how their students took advantage of them. It is clear that there are many teachers who have very limited access to computers and who do not feel competent with the technology, and this hampers their use of the JASON curriculum and the other Internet resources available through Minnesota IDEALS.

The second barrier identified by the respondents related to the instructional materials and supplies needed to teach the JASON curriculum. Several respondents complained that the curriculum required many supplies that they did not have on hand in their schools, and that little or no money was available to purchase the supplies. This is a problem that is likely to occur with any curriculum that stresses hands-on science activities for upper elementary grades. Elementary schools are often not well equipped with science lab supplies and, because the tradition of teaching science at the elementary level is not strong, many elementary teachers are unfamiliar with these kinds of materials.

The third impediment to using the curriculum was the timing of the teacher workshops. Several teachers noted that it was difficult to implement the JASON lessons when the school year was already underway and other lessons had been planned in advance. They wanted to receive the curriculum and teacher training before the start of the school year or in early fall so they could better integrate the JASON lessons with their overall curriculum.

QUESTION 5: How do mentor teachers describe their experiences in the workshops and mentor teacher program?

The mentor teachers were asked to complete surveys immediately before and after the mentor teacher workshop. Six of the 13 respondents to the pre-workshop survey had used the JASON curriculum in the past, four had used the Bell learning kits, four had participated in Bell Museum tours or other programs, two had used Bell Live!, and two had no previous involvement with the Bell Museum programs (Tables MT-3 & 4). Eleven of the 13 had seen the 1997-98 JASON curriculum materials, but only two were currently using it in their teaching (Table MT-5). Six of the respondents planned to use the JASON curriculum as a part of existing science units, with the remainder planning to use it as a special unit on its own (Table MT-6).

Tables MT-7 reports the mentor teachers' perceptions of the effect of the workshop on their knowledge of and comfort with computer applications. Before the workshop the respondents perceived relatively high comfort levels with e-mail,

Netscape, and Internet search engines, but low comfort with other Internet-based applications and computer-based student projects. Most of the respondents perceived no change in their knowledge of Internet-based applications as a result of the workshop. Between three and six of the participants perceived an improvement in their comfort level with these applications after the workshop, but most reported no change in their comfort level. These results are very similar to the effect of the computer sessions reported by participants in the Minnesota IDEALS teacher workshops (Table TW-12).

All of the respondents to the post-workshop survey reported increased knowledge of the goals and approaches of the JASON Project as a result of the workshop (Table MT-10), but only four of the 14 felt well prepared to implement the curriculum without looking at it more closely (Table MT-12).

Half of the mentor teachers were familiar to some degree with the Minnesota Graduation Standards, but just one person reported writing a packet to fulfill one of the standards (Table MT-8). After the workshop nine of the 14 respondents thought they could use the JASON curriculum to meet a graduation standard, but five said they needed someone else to develop a curriculum packet in order for them to use JASON materials to meet a graduation standard (Table MT-13).

The respondents' understandings of their roles as mentor teachers was improved by the workshop (Table MT-2) and most of them reported being excited about helping teachers in their region of the state (Table MT-9). All but one respondent agreed that the workshop had improved their ability to answer teachers' questions about the JASON Project curriculum (Table MT-11). Eleven of the 14 respondents on the post-workshop survey reported being "full of ideas and possibilities" as a result of the workshop (Table MT-14).

In written comments the hands-on lab activities and aquatic field study of the Mississippi River were most often mentioned as the best parts of the workshop (appendix, pp. 31-32). The short amount of time available to deal with a large amount of information was the respondents' least favorite aspect of the workshop.

Mentor teacher journals

The mentor teachers' journals contained additional descriptions of their experiences i) in the teacher workshops, ii) using the JASON Project curriculum, and iii) interacting with other teachers.

Most of the teachers praised the mentor teacher workshop, as illustrated by this comment:

> My impressions were that the information was tightly

> organized, very well tied into the standards, and exciting. I am very into the topics covered and felt almost like I was having a little vacation to Monterey Bay.

But as noted above, the amount of material and the pace of the workshop did cause some concerns.

> An action-packed day with almost too much to absorb.
>
> I felt rushed through the afternoon "preparing for the poster session" activities and hoped that by reading I'd come to fully understand these activities.

Similarly, the mentor teachers were impressed by the Minnesota IDEALS teacher workshops, but some had ambiguous feelings about the large number of topics covered in the time that was available.

> The day went well, however, I wondered how the teachers felt about all the information that was crammed into one day. I thought it might seem rather overwhelming to some who had no familiarity with the JASON Project before. Covering a bit of everything does have the advantage that at least the teachers have been exposed to all parts of the curriculum.
>
> I wish the teachers could of spent more time actually working with the curriculum...In order to add more curriculum time, something would have to change & I'm not sure what you would cut or shorten.

There were also some concerns about their preparation to participate in the workshops and their limited involvement in planning the workshops.

> ...during the training I think I made it painfully obvious that JASON was very new to me and that I was also learning. I suppose maybe one more day of training with the JASON curriculum would have made me feel more comfortable and also experienced.
>
> I feel the staff has left us out of the planning stages for our workshops. But it is ok since I need to learn more about JASON myself. I would like to know more details about the workshop agenda besides bringing a sample of local pond water to test.

The mentor teachers gave many accounts of using the JASON Project curriculum, which included plenty of satisfying moments:

> Some students read the interviews of the scientists and prepared to share the interviews with the class...I find the interviews most interesting to the children when they go to the live telecast and gleefully spot "their" scientist.
>
> I love how the curriculum has tied in literature, writing, math, and history with the science. It is wonderful.
>
> We used the "draw your idea of a scientist" activity, and had the students write a letter to Dr. Ballard as if they were applying to be argonauts...One of the boys said in his letter that before he heard about JASON he had not wanted to go to the ocean. I feel this is an important aspect of my continued efforts to expand the horizons of my students. Many of them never travel outside their rural area, and never have dreamed of the possibilities open to them in the world. I hope someday I will see one of these kids as a JASON argonaut!
>
> We completed our aquatic field study at the outlet of an old dam on the Pomme de Terre river. The groups enjoyed being outdoors collecting data as real scientists do. We have also decided to repeat our field study in the spring and analyze differences.

Their accounts of using the JASON curriculum also included frustrations, which often entailed technological problems:

> I am very disappointed in the unavailability of our hookups to the advanced technology. It made me feel more and more annoyed as time went on that there were many great things I couldn't be part of because I couldn't get the CD-ROM connections. I'm surmising that many interested teachers and students felt left in the dust and that it was unfair for the system to have run this way. I know teachers at my school felt as I did about this. I hope the JASON Project will rethink the heavy dependence on advanced technologies and work to make all parts of their program accessible for the near future.
>
> Our district is in process of upgrading computer

> technology and use of the Internet has been difficult. Too often, just as a student finds a location they want, the computer freezes and the time is wasted. I had difficulty finding out why JASON@school always froze; that also seemed to be a memory problem. As the system is upgraded and I have more time to explore, I'm sure our use of these tools will increase.

But when the technology was available and working properly, the teachers had good things to say:

> The live chat with Robbie Smith was during our free play so I invited students who have him as their researcher for their portfolio to come to the Macintosh lab for the chat. About 15-20 students showed up out of 83. A few of them have a different researcher but they wanted to be in on the chat also. About 4-5 of our questions were accepted by Brian for Robbie. We learned a lot of things. It was great.

The journals also describe some of the dilemmas of integrating the JASON Project curriculum with an established curriculum that does not emphasize inquiry science. This mentor teacher described the conflict she felt between JASON's hands-on emphasis and traditional textbook science, with its guiding principle of "covering" the material:

> I attempted to do JASON in lieu of a traditional unit. However, JASON did not have the continuity nor the depth of a traditional "book" unit. Also I felt guilty spending more than the three weeks I did on the project and therefore stopped short of some of the larger hands-on activities with marine snow, kelp, etc...I wish I had more easy access to the materials and/or money for the materials. The time it takes to get everything organized and together can make hands-on happen less frequently than it actually should be happening. When I asked students their opinions of JASON the response was very positive--they especially enjoyed the hands-on activities and several simply enjoyed the break from the book.

The mentors were asked to assist teachers in their region of the state with questions concerning the JASON Project and other Minnesota IDEALS programs. Several of the mentor teachers say little or nothing in their journals about interactions with other teachers. Besides assisting with the workshops, these individuals apparently did little mentoring. Others, however, told stories of their

interactions with colleagues, often teachers in their own buildings. Some tell remarkable stories of success, like this:

> We had our first JASON meeting and we got teachers from the language arts department, as well as basic education, science, and art. The creative energy that flowed from all these teachers made JASON come alive for all of our special needs students...When you are teaching special education students, programs such as these make good sense because they engage the students. Hands-on programming, actively participating in questions, and using computers are right down these students' alleys...With a little time and effort, cooperation, a lot of luck, and a whole lot of determination put out by both staff and students, Bob Ballard's program has reached even the most difficult of students. In the process these students learned something about science and technology. Their world that used to only consist of their little neighborhoods and maybe the megamall was expanded beyond those areas to now include the world of science...The JASON program took [our students] another step away from crime & poverty, and another step closer to being productive members in our society.

Others describe the challenge of convincing teachers to change how and what they teach when they are already attempting to respond to multiple demands on their classroom practices:

> I want to involve other teachers in the building, but I realize I may have little success in doing so. They have their own agendas and curriculums. When I mentioned using it in first grade for science the classroom teacher was concerned about fulfilling one of the graduation standard components, now done using a FOSS kit. I think this is more evidence of our continued confusion between the grad standards themselves, and performance packages used to assess them, than it is a comment on JASON itself.

V. Recommendations

Most of the data reviewed here suggest that the respondents to the teacher surveys were very pleased with the quality the Minnesota IDEALS programs. The low return rate for the year-end survey is reason for some concern because there are many teacher workshop participants whose subsequent experiences with Minnesota

IDEALS are unknown. A more trustworthy measure of the success of Minnesota IDEALS would require some effort to contact a sample of these nonrespondents to determine whether they used the JASON Project curriculum and other components of Minnesota IDEALS and what their experiences were. Despite this shortcoming in the data, this report contains a good deal information that suggests that Minnesota IDEALS is successfully pursuing its mission statement and goals.

There are also data here that suggest the need to carefully examine certain aspects of Minnesota IDEALS and perhaps implement some changes. I will address my recommendations to three areas of Minnesota IDEALS: i) teacher workshops, ii) mentor teachers, and iii) technology.

Teacher workshops: Consider the focus of the workshops and eliminate what is not essential. I am concerned that in an effort to cover many useful topics, the workshops duplicated the overstuffed science curriculums that are common in too many classrooms. I recommend that the workshops emphasize depth of experience over breadth of coverage. In my view the hands-on experience with the JASON curriculum and the computer sessions were the key components of the workshops, and many participants wished that more time had been spent on those activities.

There is reason to believe that these activities require more time if the participants are to come away with useful skills. For instance , based on my observation of one of the teacher workshops I agree with this comment from the journal of a mentor teacher:

> I learned that I needed to talk some about the inquiry approach and how that leads into a format that works well for posters. I feel that the posters should reflect the focus question, the procedures (& materials used) what was done, conclusions/learnings, and hopefully another line of inquiry. Some teachers still looked at a poster as a more simplistic sharing device.

My impression during the workshop I observed was that too many of the teachers did not understand inquiry approaches to science education, as opposed to simple "hands-on" activities. It also seemed to me that too many of the participants completed the hands-on assignment without a grasp of the relevant science content and without an explicit awareness that what they were *supposed* to be doing was posing, pursuing, and critically examining questions and answers.

I recommend that the workshops tackle the admittedly ambitious task of modeling inquiry methods for the participants. This requires expecting from teachers the same sort of focus and attention to both content knowledge and ways of knowing that they ought to expect from their students. An activity that is rushed

and focused on getting the poster done, rather than using the poster to report the results of some hard thinking, is not modeling inquiry learning, and is not doing what it should to advance the goals of Minnesota IDEALS and the JASON Project. It should not be assumed that because teachers (including mentor teachers) express an interest in the JASON Project they are committed to and can implement inquiry approaches to science education.

Similarly the computer sessions were very important components of the workshops, but based on the survey data they had very little impact on the participants' knowledge of or comfort with computers. Given the place of the Internet in the JASON Project and in the future of distance education, Minnesota IDEALS has a major stake in impacting the computer skills of Minnesota teachers. A quick guided tour of several computer applications is not what teachers need; they need the opportunity to build skills and confidence on computers and that requires more than a cursory exposure to the technology.

Accomplishing the kind of focus I am recommending within the workshop format used in 1997-98 would require the difficult step of eliminating most of the topics that were covered during the morning session. An alternative would be to offer introductory and advanced workshops, with the advanced sessions focusing on inquiry learning and/or computer technology.

Mentor teachers: Expect leadership from them and help them provide it. If the mentor teacher program remains a long-term component of Minnesota IDEALS, I recommend that the mentors be offered increased responsibilities and opportunities for leadership. Being a Minnesota IDEALS mentor teacher should involve a significant commitment, but offer a significant reward in return. These individuals should be the foci of reform activities in their buildings, districts, and regions. This might be accomplished by involving them more centrally in planning and running teacher workshops; by encouraging small groups of mentors to present at state and national meetings of professional associations such as the Minnesota Science Teachers Association or National Science Teachers Association; or by asking each mentor to establish and work toward modest but specific goals each year, such as recruiting one other teacher in their building, district, or nearby district to implement a Minnesota IDEALS program in their classroom. The mentors should also work toward excellence in inquiry methods of science education and the effective use of computers and the Internet, and the Bell Museum should support them in that task.

Technology: A significant barrier to the implementation of Minnesota IDEALS. Minnesota IDEALS both advocates the effective use of technology in science education and is limited in its impact by unequal access to technology in classrooms across the state. Overall the most common problems identified by this evaluation were related to computer and video technology. Too often a glowing report about

the use of the Internet in the JASON Project was followed by a description of another teacher's futile attempts to accomplish the most simple Internet tasks. And 20-26% of the respondents to the year-end survey did not view any of the JASON broadcasts, which suggests to me that an even larger percentage of the nonrespondents failed to access the broadcasts. Minnesota IDEALS has a strong interest in insuring that its target teachers have access to, and at least minimal competence with, computer technology, and that every teacher in the state who wants a videotape of a JASON broadcast is able to easily obtain one with little or no expense. As I suggested in my previous recommendations, the Bell Museum might focus its efforts in this area on providing in-depth, inquiry-oriented computer and Internet training for teachers. Minnesota IDEALS and the JASON Project are currently technologically ahead of most of their target teachers. I my view these programs must help teachers and districts get up to speed technologically or the relatively small reservoir of patience among educators for yet another curriculum innovation may be quickly exhausted. On the positive side, Minnesota IDEALS provides access to curricula that students and teachers like and it incorporates technology in those curricula in meaningful ways. Given a few positive experiences with this combination of inquiry-oriented activities and technology it appears that teachers will come back asking for more.

VI. APPENDIX

A. Mentor teacher workshop

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C. Minnesota IDEALS teacher workshop

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E. Minnesota IDEALS year-end teacher survey

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NOTE: Data tables in the appendix are numbered using these abbreviations:

MT = mentor teacher survey results
TW = teacher workshop survey results
JB = JASON at the Bell survey results
YE = Year-end survey results

Minnesota IDEALS **Name**_____

JASON IX: Mentor Teacher Training

Pretraining Comments:

1. How did you learn about the Mentor Teacher program?
   - ___Received a letter regarding the Mentor Teacher program
   - ___My principal contacted me about it
   - ___A teaching colleague told me about it
   - ___A Bell Museum staff person called me
   - ___Other:_____

2. How well do you understand your role as a Mentor Teacher?
   - ___I am unclear about what is expected of me.
   - ___I have a basic understanding of my role, but I have some questions or uncertainties. List them below:

   - ___I understand my role as a Mentor Teacher and have no questions for now.

3. I have used the following programs offerred by the Bell Museum (check all that apply)
   - ___JASON Project
   - ___Bell LIVE!
   - ___Learning Kits
   - ___Tours/Programs
   - ___Other (please describe)
   - ___This is my first involvement with the Bell Museum

4. Describe your involvement with JASON Project curriculum units from past years.
   - ___I have had no involvement with the JASON Project.
   - ___I am somewhat familiar with the JASON Project, but have not used it in my classroom.
   - ___I have used some of the components of the JASON Project in my classroom.

5. Check the one statement that best describes your familiarity with <u>this year's</u> JASON Project:
   - ___I know nothing about it.
   - ___I know a bit about this year's topics because of discussions with colleagues or Bell Museum staff.
   - ___I have seen the curriculum but need to study it more before using it.
   - ___I have seen the curriculum and am ready to implement it in my classroom.
   - ___I have already started using the curriculum in my classroom.

6. This year I plan to use the JASON Project materials (check all that apply)
   ___as a new science unit
   ___as part of existing science units
   ___as a thematic unit (Name of unit:_____)
   ___as an interdisciplinary, thematic unit in a team setting
   ___as a year-long unit
   ___as a special unit in late winter or early spring
   ___Other:_____

7. Rate how comfortable you are using the following computer resources:
   (1 = very uncomfortable 2 = uncomfortable 3 = comfortable 4 = very comfortable)
   ___e-mail
   ___Netscape or similar program
   ___~~bulletin boards~~
   ___databases
   ___chat sessions
   ___computer-based student project
   ___homepage construction
   ___Internet search engines
   ___Other: Please describe here:

8. What is your level of understanding of the Minnesota Graduation Standards?
   ___I have heard about them through the media (i.e. news reports, newspaper)
   ___I have discussed them informally with colleagues.
   ___We have discussed them in our building at a staff meeting or at a division meeting.
   ___I have a copy of the standards.
   ___I have read through the standards.
   ___I have looked at a packet for at least one of the standards.
   ___I have attended a conference on the standards.
   ___I have been trained in the design and implementation of the Minnesota Graduation Standards.
   ___I am writing (or have written and submitted) a packet for meeting one of the standards.

9. What are the three most important reasons you have for using (or want to use) the JASON Project and related materials in your classroom?

Minnesota IDEALS **Name**_____

JASON IX: Mentor Teacher Training

Posttraining Comments:

1. How well do you understand your role as a Mentor Teacher?
   ___I'm unclear about what is expected of me.
   ___I have a basic understanding of my role, but I have some questions or uncertainties. List them below:

   ___I understand my role as a Mentor Teacher and have no questions for now.

2. What is your "comfort level" with your position as a Mentor Teacher?
   ___I feel unprepared for the task at hand.
   ___I feel somewhat prepared for the task at hand.
   ___I feel I can provide assistance to teachers in my region.
   ___I am excited about helping teachers in my region with their implementation of the JASON Project and future Minnesota IDEALS programs
   ___Other:_____

3. As a result of this training session, my knowledge of the goals and approaches of the JASON Project has
   ___Increased
   ___Stayed about the same
   ___I am less certain now about the goals and approaches of the JASON Project than I was before the workshop.

4. This workshop improved my ability to answer other teachers' questions about this year's JASON Project curriculum and associated materials.
   ___Strongly disagree ___Disagree ___ Agree ____Stongly Agree

5. As a result of attending this workshop.... (Check all that apply)
   ___I have some <u>new ideas</u> for how I will be implementing the JASON Project in my classroom.
   ___I feel that I am well prepared for implementing the curriculum in my classroom.
   ___I will need to spend some time looking over the curriculum before I implement it in my classroom.
   ___I doubt I will be implementing the curriculum in my classroom.
   Please explain:_____

6. As a result of this workshop, my knowledge and comfort level in these computer applications.....

(+ = increased 0 = no change - = decreased)

	My Knowledge:	Comfort Level:
e-mail	____	____
Netscape or similar program	____	____
bulletin boards	____	____
databases	____	____
chatsessions	____	____
computer-based student projects	____	____
Homepage construction	____	____
Internet search engines	____	____

7. Which best describes your view of the relationship between JASON Project materials and the Minnesota Graduation Standards?

___I will not use the JASON curriculum to meet a Minnesota Graduation Standard.

___I am unclear how to use the JASON Project materials to meet the Minnesota Graduation Standards.

___I need a JASON curriculum packet to be developed to meet at least one of the Minnesota Graduation Standards.

___I could develop a JASON curriculum packet to meet at least one Minnesota Graduation Standard.

___I can use the JASON curriculum to meet at least one of the Minnesota Graduation Standards.

___Other:_____

8. How do you feel about your JASON Project Mentor Teacher Training experience?

___Drained

___Invigorated

___Full of all sorts of ideas/possibilities

___It was a waste of my time

___Too much information was presented

___Other:_____

9. My favorite part of the day was.....

My least favorite part of the day was.....

10. Use this space to tell us any other information you wish us to know. (continue on back if needed)

Have a safe trip home! Thanks for your time, input, and dedication!

MENTOR TEACHER WORKSHOP SURVEY RESULTS

Pre-workshop surveys, n=13
Post-workshop surveys, n=14

I. Pre-workshop survey results and before/after comparisons

Table MT-1. How the respondents first heard of the Mentor Teacher program.

How did you learn about the Mentor Teacher program?	No. of respondents
Received a letter	4
My principal contacted me	1
Another teacher told me about it	0
From a Bell Museum staff person	5
Other: my sister, in a workshop, Elsie R.	3

Table MT-2. Respondents' understandings of the role of a Mentor Teacher, assessed before and after the workshop.

How well do you understand your role as a Mentor Teacher?	No. of respondents Before	After
I have a basic understanding of my role, but I have some questions or uncertainties*	7	6
I understand my role and have no question for now	3	8
I am unclear about what is expected of me	2	0

* Uncertainties before the workshop: 1) I don't know enough to ask a good question!, 2) Dates, personal preparation necessary, 3) What is my mentorship role with regards to training other teachers? What area(s) will I need to help with & how will I be "networked" with the teachers that I am supposed to mentor?
Uncertainties after the workshop: 1) How will the workshop be organized and led?, 2) The time and place of the Winona workshop, 3) What do I have to show/demonstrate?, 4) The number of workshops each mentor teacher will attend, 4) Will my role in the next workshop be planned/organized for me or will I need to plan how to present the material to other teachers? Who will organize/bring materials? Is there an agenda for the next workshop?

Table MT-3. Bell Museum programs used by the respondents.

Bell Museum programs used	No. of respondents
JASON Project	6
Tours/other programs	4
Learning kits	4
First involvement with Bell Museum programs	4
Bell LIVE!	2

Table MT-4. Respondents' past involvement with the JASON Project.

Past involvement with the JASON Project	No. of respondents
Used some components in the classroom	6
None	5
Somewhat familiar, but no classroom use	2

Table MT-5. Respondents' familiarity with 1997-98 JASON Project (JASON IX).

Familiarity with JASON IX	No. of respondents
Seen the curriculum but need to study it before using it	10
Currently using the curriculum	2
Somewhat familiar from discussions with colleagues and/or Bell staff	1
Seen the curriculum and ready to use it	0
None	0

Table MT-6. Respondents' plans for using the JASON Project curriculum next year.

Plan to use the JASON Project materials next year...	No. of respondents
as part of existing science units	6
as an interdisciplinary unit in a team setting	3
as a year-long unit	3
as a special unit in late winter or early spring	2
as a new science unit	2
as a thematic unit	0
other: 1) as a graduation standard inquiry unit; 2) not sure when to use it	2

Table MT-7. Respondents' comfort with computer applications before the workshop, and the effect of the workshop on their knowledge and comfort.

Computer applications	No. of respondents Comfort level before workshop (n=13) 1 = very uncomfortable 2 = uncomfortable 3 = comfortable 4 = very uncomfortable				No. of respondents Change in knowledge (n=14) + = increased o = no change – = decreased			No. of respondents Change in comfort level (n=14) + = increased o = no change – = decreased		
	1	2	3	4	+	o	–	+	o	–
e-mail	0	0	5	8	1	11	0	3	9	0
Netscape	0	2	4	7	3	8	0	6	6	0
bulletin boards	3	8	1	1	0	12	0	3	8	0
online databases	1	8	3	1	0	12	0	1	9	1
chat sessions	3	7	2	1	2	10	0	0	10	1
computer-based student projects	2	5	5	1	1	11	0	4	9	0
homepage construction	6	7	0	0	0	12	0	0	10	1
Internet search engines	0	2	4	7	2	10	0	2	9	0

Table MT-8. Respondents' descriptions of their exposure to the Minnesota Graduation Standards. (n=13, some respondents checked more than one item)

Exposure to the Minnesota Graduation Standards	No. of respondents
Have a copy of them	7
Have read through them	7
Attended a conference on the Standards	6
Been trained in their design and implementation	6
Looked at a packet for at least one of the Standards	4
Have discussed them at a school faculty meeting	2
Have written/am writing a packet to fulfill one of the Standards	1
Heard about them through the media	1
Discussed them informally with colleagues	1

Free response items

Question: What are the three most important reasons you have for using (or wanting to use) the JASON Project and related materials in your classroom?

Grouped by respondent:

- Dee has been telling me about and promoting it for years.
- If it fits the MN Grad Standards it will be great because it integrates science, technology, literature & social studies.
- Worthington is and likes to be progressive in new technologies.

- Students participate in real world activities and can use their skills in a purposeful setting.

- To expose students to the program.
- To "teach/show" students the importance of science.
- To be actively involved n science & teaching students how to use the computer, etc. in class in a useful way.

- We are incorporating a "House" style of education.
- Marine bio is a huge component of my teaching style.

- "Live" interactive science.

- Integrates easily into curriculum.
- Technology & field trip to JASON Live! are exciting addition to curriculum.

- Inquiry based learning.
- Technology integration w/students.
- Increase my comfort level with interactive technology.

- New ideas for my classroom.
- A way to be connected to something bigger and more global.
- Get students involved in using technology and see science applied.

- To add more hands-on and inquiry based curriculum into my teaching.

- Contacts for kids outside the classroom.
- Hands-on/real world.
- I have been extensively involved in water-related ed in my school - this gives an added dimension.

- Natural interdisciplinary
- Change of pace
- Opportunity for students to see interactive media

- Student interest/engagement
- My own passions/interests
- Interaction w/ community (& larger...) resources for learning

- It's credible!
- I need curricula - that's "techno-friendly".
- Opportunity for thematic units - with other areas.

- To incorporate the hands-on activities presented in the curriculum.
- To give students an opportunity to become aware of current research & technology used in science
- To add variety & activities which meet science standards in my classroom.

II. Post-workshop survey results

Table MT-9. Respondents' descriptions of their comfort level as Mentor Teachers. (n=14, some respondents checked more than one item)

Comfort level as a Mentor Teacher	No. of respondents
Excited about helping teachers in my region	9
Feel I can provide assistance to teachers in my region	5
Feel somewhat prepared for the task	2
Feel unprepared for the task	0

Table MT-10. Respondents' descriptions of the effect of the workshop on their knowledge of the goals and approaches of the JASON Project.

Knowledge of goals and approaches of JASON Project	No. of respondents
Increased	14
Stayed the same	0
Decreased	0

Table MT-11. Respondents' ratings of the effect of the workshop on their ability to answer teachers' questions about the JASON Project.

Question	Rating scale SD = strongly disagree D = disagree A = agree SA = strongly agree			
	SD	D	A	SA
The workshop improved my ability to answer other teachers' questions about this year's JASON Project curriculum and associated materials	1	0	9	3

Table MT-12. Respondents' descriptions of the effect of the workshop on their ability to implement the JASON Project curriculum. (n=14, some respondents checked more than one item)

As a result of attending this workshop...	No. of respondents
I have new ideas for implementing the JASON Project	9
I need to spend some time looking over the curriculum before implementing it	9
I am well prepared for implementing the curriculum	4

Table MT-13. Respondents' perceptions of the relationship between JASON Project curriculum materials and the Minnesota Graduation Standards. (n=14, some respondents checked more than one item)

Relationship between JASON Project materials and MN Graduation Standards	No. of respondents
I can use the JASON curriculum to meet at least one of the graduation standards	9
I need to have a JASON curriculum packet developed by someone else to meet at least one of the graduate standards	5
I could develop a JASON curriculum packet to meet at least one of the graduation standards	2
I will not use JASON to meet the graduation standards	0
I am unclear how to use JASON to meet the graduation standards	0
Other: 1) unsure, 2) need to look through materials to see which inquiry standard can be met.	2

Table MT-14. Workshop participants' descriptions of their feelings about the Mentor Teacher training experience. (n=14, some respondents checked more than one item)

Feelings about the Mentor Teacher training experience	No. of respondents
Full of ideas and possibilities	11
Invigorated	6
Drained	2
Waste of my time	0
Too much information was presented	0
Other: A lot was presented but was necessary to "see" a bit of the curriculum.	1

Free response items

Item: "My favorite part of the day was..."

- Field work by the river, computer lab, learning more about El Nino - really everything was great.
- All was fun.
- Actually doing the projects & learning more.
- River time.
- The activities.
- Networking with other teachers about JASON curriculum.
- Field work.
- Field study, group activity/lab.
- The aquatics by the river - very good and I can use immediately.
- Aquatic field study.
- All was well done.
- Doing the hands-on activities.
- By the river (hands on).
- The aquatic study.

Item: "My least favorite part of the day was..."

- A lot of info in a big hurry.
- I enjoyed/learned from everything
- The camera man! - very uncomfortable & a little obnoxious but I understand.
- Time is too short.
- Short computer session. No time [for me] to explore last yrs frustrations

with [an] expert handy.
•Not having past experience of JASON - felt it was all new (except the aquatic studies).
•Rushed computer time.
•Too busy of a location - could we have other training sessions out of the metro area?
•Went too fast - would have liked more time at each thing.
•Waiting for the computer lab - not having enough time in there to explore satisfactorily.
•A few minutes of video (shorter?)
•Would have liked to spend more time on the internet/computers

Item: "Tell us any other information you wish us to know."

•Great day - very helpful training.
•Jason Home School Page - I'm still confused! I need to spend more time looking at the site.
•Wish we could have spent a little more time walking through curriculum but w/ time limitations I can do that at home.
•Thanks for everything
•Thanks much for the super day! I'm ready and willing for JASON...

MENTOR TEACHER JOURNAL GUIDELINES

Minnesota IDEALS
Mentor Teacher Journals

The Bell Museum needs your help to evaluate the classroom effectiveness of the curricula associated with Minnesota IDEALS. As a mentor teacher you are in an excellent position to judge the quality of these curricula based on your own teaching and on the interactions you have with teachers in your area. To add a strong "real life" component to our evaluation we are asking you to keep a detailed journal of your experiences as a mentor teacher. We would like you to focus on two topics in your journal:

1. Your experience using curricula associated with the JASON Project, Bell minikits, and Bell LIVE. Some topics you might address include:

   - Describe the materials you use, how you modify them, and how well they fit with your other lessons.
   - Offer constructive criticism: what's good, what's bad, and how can it be improved?
   - Describe the effect of the curricula on your students' understanding of and attitudes towards science and technology. Specific accounts of impacts (good or bad) on students' learning are very helpful.
   - Do the curriculum materials change the way you teach?
   - Are there barriers that hinder your ability to use the materials effectively?

2. Your interactions as a mentor teacher with other teachers.

   - Keep track of the questions and comments you receive from teachers. What kinds of help do they need and can you provide it?
   - Examples of how the curricula are being used--describe the excellent and the ordinary.
   - What aspects of the curricula make them easy or difficult to use?
   - What do other teachers like and dislike--document the range of reactions.
   - How do teachers believe the curricula impact students' understanding and attitudes toward science and technology?
   - Reflections on your experience as a mentor teacher; what works in the mentor program and how can it be improved?

You can keep your journal in the notebook provided or on computer disk. We will ask for copies of your comments in February and at the end of the school year. The journals will be treated confidentially and any excerpts used will remain anonymous. We very much appreciate your assistance in this evaluation!

MINNESOTA IDEALS TEACHER WORKSHOP SURVEY INSTRUMENT

Please help us evaluate this workshop by answering the following questions. Your responses will remain anonymous. THANK YOU!

BACKGROUND

1. Location and date of this workshop _____
2. Name of your school district _____
3. Grade level(s) you currently teach _____
4. Subject(s) you currently teach _____
5. Your age: ___ <30 ___ 30-40 ___ 41-50 ___ 51-60 ___ 61+
6. Number of years you have been teaching _____
7. In your opinion what are the three most important characteristics of a good science curriculum? (Check only three)

____ Connecting students to current research and researchers
____ Integrating other subject areas
____ Meeting the Minnesota Graduation Standards
____ Teaching fundamental science vocabulary
____ Teaching problem solving and critical thinking
____ Preparing students for careers in science
____ Exposing students to technology in the classroom
____ Preparing students to be scientifically literate citizens
____ Teaching through hands-on scientific activities
____ Exciting students about science
____ Helping students understand science concepts
____ Relevance to students' lives
____ Other(s) _____

8. Which of the following programs offered by the Bell Museum have you used? Check all that you have used and rate the overall educational quality of those programs.

Quality rating scale: 1=poor 2=fair 3=good 4=very good 5=excellent

Check if used in the past	
____ JASON Project	quality rating: _____
____ Bell LIVE!	quality rating: _____
____ Bell Museum learning kit	quality rating: _____
____ Bell Museum tours	quality rating: _____
____ Other (please describe)	quality rating: _____

9. How did you first learn about the Minnesota IDEALS program? (Check one)

____ Received a brochure through the mail
____ Picked up a brochure at MEA/MFT
____ Picked up a brochure at MSTA
____ Found it on the Bell Museum web site
____ My principal told me about it
____ Another teacher told me about it
____ A Bell Museum staff person called me
____ Other _____

10. Describe your involvement with JASON Project curriculum units in past years. (Check one)

____ I had no knowledge of the JASON Project before this school year.
____ I was familiar with the JASON Project but did not use it in my classroom.
____ I have used some of the components of the JASON Project in my classroom.

WHAT DO YOU THINK?

Carefully read the following statements and indicate whether you agree or disagree.

1=strongly disagree 2=disagree 3=agree 4=strongly agree

Statement	Circle one:
11. This workshop clearly described the components and educational goals of Minnesota IDEALS.	1 2 3 4
12. This workshop clearly described the components and educational goals of the JASON Project.	1 2 3 4
13. This workshop demonstrated how the curriculum materials associated with Minnesota IDEALS can be used to meet Minnesota Graduation Standards.	1 2 3 4

Carefully read the following statements and indicate whether you agree or disagree.

1=strongly disagree 2=disagree 3=agree 4=strongly agree

Statement	Circle one:
14. The curriculum materials I saw in this workshop are significantly better than those typically used at my level in my district.	1 2 3 4
15. The lessons we reviewed today would be effective with my students.	1 2 3 4
16. The curriculum materials I saw today are among the best I have ever seen for students in the grades I teach.	1 2 3 4
17. I will have difficulty using some of the components of the JASON Project curriculum because I have limited access to computers and video technology.	1 2 3 4

Carefully read the following statements and indicate whether you agree or disagree.

1=strongly disagree 2=disagree 3=agree 4=strongly agree

Statement	Circle one:
18. Based on today's activities I feel prepared to use the JASON curriculum materials in my classroom.	1 2 3 4
19. I feel comfortable contacting the Minnesota IDEALS mentor teachers with my questions or concerns.	1 2 3 4
20. As a result of this workshop I know of science experts in my area to invite into my classroom.	1 2 3 4
21. I had opportunities to ask questions during this workshop.	1 2 3 4
22. I had time to share ideas with other teachers today.	1 2 3 4
23. This workshop was well organized and clearly presented.	1 2 3 4
24. I would recommend this workshop to another teacher.	1 2 3 4

25. Describe how comfortable you were using the following computer applications prior to this workshop and the effect of today's workshop on your comfort level.

Computer applications	Your comfort level prior to today: (1=low, 2=medium, 3=high)	Effect of workshop: (+) = increase (-) = decrease (o) = no effect
e-mail		
Netscape		
Online discussion forums		
Online databases (e.g., local aquatic study)		
Online chat sessions		
Computer-based student projects		
Construction of a homepage		
Internet search engines (e.g., Lycos, Yahoo)		
Other:		

26. Check all of the components of Minnesota IDEALS that you expect to use during the 1997-98 school year. (Check all that apply)

____ JASON written materials
____ JASON telecasts
____ JASON website
____ Other (please describe):

____ Bell Museum learning kits
____ Bell Museum website
____ Bell Museum tours

27. Rate the overall quality of this workshop in preparing you to use the curriculum materials associated with Minnesota IDEALS. Circle one:

poor fair good very good excellent

28. What were the most helpful aspects of this workshop?

29. What were the least helpful aspects of this workshop?

30. How can this workshop be improved?

I-TV QUESTIONS

1. Before today, have you been in a class or workshop that used I-TV?

____ Yes ____ No

2. My participation and interest in the I-TV segment of the workshop were (check one):

____ less than in a traditional workshop setting
____ no different than in a traditional workshop setting
____ greater than in a traditional workshop setting

3. The I-TV segment of today's workshop was a satisfactory way to make training available in my region of the state.

____ Strongly agree
____ Agree
____ Disagree
____ Strongly disagree

4. What was an advantage of using the I-TV in this workshop? A disadvantage?

5. Can you think of ways you could use I-TV in your classroom? Please explain.

MINNESOTA IDEALS TEACHER WORKSHOP SURVEY RESULTS

Table TW-1. Grades taught by MN IDEALS workshop participants (n=298).

Grades taught	% of respondents
K-4 only	21.5
5-8 only	42.9
9-12 only	4.7
K-4 & 5-8	19.1
5-8 & 9-12	7.4
K-12	1.7
no response	2.7

Table TW-2. Subjects taught by MN IDEALS workshop participants (n=298)

Subject	% of respondents
multiple subjects including science	54.7
science/math	28.2
social studies and humanities	4.4
no response or not applicable	12.7

Table TW-3. The age of MN IDEALS workshop participants (n=298).

Age of participants	% of participants
less than 30	19.8
30-40	30.2
41-50	35.2
51-60	13.1
61+	0.3
no response	1.3

Table TW-4. Years of teaching experience of MN IDEALS workshop participants (n=298).

Years of teaching	% of participants
1-5	27.2
6-10	20.1
11-20	22.9
21 or more	21.1
no response	8.6

Table TW-5. The most important characteristics of a good science curriculum according to MN IDEALS workshop participants. Each respondent selected three characteristics from the list. (n=298)

Characteristics of a good science curriculum	% of respondents
Teaching problem solving and critical thinking	60.1
Exciting students about science	53.7
Teaching through hands-on scientific activities	51.0
Relevance to students' lives	26.2
Helping students understand science concepts	25.2
Preparing students to be scientifically literate citizens	21.5
Connecting students to current research and researchers	19.1
Integrating other subject areas	15.4
Exposing students to technology in the classroom	7.0
Meeting the Minnesota Graduation Standards	6.7
Teaching fundamental science vocabulary	1.0
Preparing students for careers in science	0.7
Other	1.0

Table TW-6. Percent of participants who have used programs offered by the Bell Museum and their ratings of the quality of those programs. Rating scale: 1=poor; 2=fair; 3= good; 4=very good; 5=excellent; x = mean rating. (n=298)

Program	% who used the program	Quality rating (No. of respondents)					
		1	2	3	4	5	x
JASON Project	30.5	0	0	7	28	55	4.5
Bell Museum tour	19.8	0	0	4	29	25	4.4
Bell Live!	10.4	0	1	3	8	19	4.4
Bell Museum learning kit	8.0	0	0	1	9	14	4.5
Bell Museum visit (no tour)	1.0	0	0	0	1	2	4.7
Bell Museum classes/camps	0.7	0	1	0	0	1	3.5

Table TW-7. How the workshop participants first learned about MN IDEALS. (n=298)

Learned about MN IDEALS from...	% of respondents
Brochure in the mail	41.3
From another teacher	32.9
In a teacher education course	5.7
School principal	5.4
From other homeschoolers	2.7
Bell Museum staff contact	2.7
At this workshop	2.0
Brochure at MSTA	1.3
Have been a Jason Project participant	1.3
Brochure at MEA /MFT	0.7
Bell Museum web site Other	0.0
Other	1.7
No response	2.3

Table TW-8. Respondents' knowledge of the JASON Project prior to the workshop. (n=298)

Involvement with JASON Project	% of respondents
No knowledge of the JASON Project before this school year.	51.3
Have used some components of the JASON Project.	24.2
Familiar with the JASON Project but have not used it.	22.5
No response	2.0

Table TW-9. Respondents' ratings of the quality of the MN IDEALS workshops. Rating scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree.

Statement	Response (%)				Mean rating (n)
	1	2	3	4	
This workshop clearly described the components and educational goals of Minnesota IDEALS.	1.3	4.4	45.0	49.0	3.4 (297)
This workshop clearly described the components and educational goals of the JASON Project.	1.0	1.3	37.2	59.7	3.6 (296)
This workshop demonstrated how the curriculum materials associated with Minnesota IDEALS can be used to meet Minnesota Graduation Standards.	3.4	16.4	47.0	31.9	3.1 (294)

Table TW-10. Respondents' ratings of the quality of the MN IDEALS workshops. Rating scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree.

Statement	Response (%)				Mean rating (n)
	1	2	3	4	
The curriculum materials I saw in this workshop are significantly better than those typically used at my level in my district.	0.3	14.8	51.0	28.5	3.1 (282)
The lessons we reviewed today would be effective with my students.	0.7	4.4	42.9	51.3	3.5 (296)
The curriculum materials I saw today are among the best I have ever seen for students in the grades I teach.	0.0	22.5	47.3	23.8	3.0 (279)
I will have difficulty using some of the components of the JASON Project curriculum because I have limited access to computers and video technology.*	21.8	35.9	29.2	10.1	2.3 (289)

(*Negatively worded item)

Table TW-11. Participants' ratings of the quality of the MN IDEALS workshops. Rating scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree.

Statement	Response (%)				Mean rating (n)
	1	2	3	4	
Based on today's activities I feel prepared to use the JASON curriculum materials in my classroom.	2.0	16.8	61.7	18.8	3.0 (296)
I feel comfortable contacting the Minnesota IDEALS mentor teachers with my questions or concerns.	0.3	6.4	46.6	45.6	3.4 (295)
As a result of this workshop I know of science experts in my area to invite into my classroom.	5.0	31.9	46.0	13.8	2.7 (288)
I had opportunities to ask questions during this workshop.	0.3	2.0	36.9	60.4	3.6 (297)
I had time to share ideas with other teachers today.	1.0	17.4	48.0	32.5	3.1 (295)
This workshop was well organized and clearly presented.	0.7	4.0	43.3	51.7	3.5 (297)
I would recommend this workshop to another teacher.	0.3	2.7	33.2	63.4	3.6 (297)

Table TW-12. Participant ratings of comfort level using computer applications and the effect of the workshop on comfort level. Comfort scale: 1=low; 2=medium; 3=high. Effect scale: (+) = increased comfort; (–) = decreased comfort; (o) = no change; (nr) = no response.

Computer applications	Mean comfort level before workshop (n)	Effect on comfort (% of respondents)
e-mail	2.3 (274)	+ = 18.1 – = 0.0 o = 67.8 nr = 14.1
Netscape	2.3 (277)	+ = 25.5 – = 0.0 o = 60.4 nr = 14.1
Internet search engines (e.g., Lycos, Yahoo)	2.2 (272)	+ = 16.8 – = 0.0 o = 67.4 nr = 15.8
Computer-based student projects	1.6 (263)	+ = 35.2 – = 0.0 o = 47.0 nr = 17.8
Online discussion forums	1.6 (262)	+ = 27.2 – = 0.0 o = 54.4 nr = 18.5
Online databases (e.g., local aquatic study)	1.5 (263)	+ = 28.2 – = 0.0 o = 54.4 nr = 17.4
Online chat sessions	1.4 (263)	+ = 21.8 – = 0.0 o = 60.4 nr = 17.8
Construction of a homepage	1.3 (266)	+ = 31.2 – = 0.0 o = 51.7 nr = 17.1

Table TW-13. Percent of participants expecting to use components of MN IDEALS in the 1997-98 school year. (n=298)

Components of MN IDEALS	% of participants
JASON written materials	90.6
JASON website	84.6
JASON telecasts	76.8
Bell Museum website	64.4
Bell Museum learning kits	44.0
Bell Museum tours	35.6
Other = mentor teachers	0.3

Table TW-14. Participants' ratings of the overall quality of the MN IDEALS workshops. Rating scale: 1=poor; 2=fair; 3=good; 4=very good; 5=excellent.

Question	Response (%)					Mean rating (n)
	1	2	3	4	5	
Rate the overall quality of this workshop in preparing you to use the curriculum materials associated with Minnesota IDEALS.	0.3	3.7	14.8	43.6	35.6	4.1 (292)

Free response items

Item: "What were the most helpful aspects of this workshop?"
(Ten most frequent responses)

Hands-on experience using the JASON curriculum
Being guided through the organization of the JASON curriculum
Receiving the JASON curriculum
Getting a general introduction to the JASON Project
Working on the computers
The poster sessions
Meeting other teachers
The workshop instructors
Guest speakers
The workshop was well organized

Item: "What were the least helpful aspects of this workshop?"
(Ten most frequent responses)

Problems with the I-TV
The poster session
Too much time on the history of the JASON Project
Morning session too long and too passive
Too much information in too little time
Not enough time on the computers
Too much time on the computers
The video excerpts
Guest speakers
Problems getting the technology to work

Item: "How can this workshop be improved?"
(Ten most frequent responses)

Make the workshop days long
Spend more time examining the curriculum
Participants should interact more; exchange experiences and ideas
More time with the computers
Do more of the hands-on activities
Use technology that works
Reduce the breadth and increase the depth of the information covered
Show examples of student projects related to the JASON curriculum
Allow participants to select the hands-on activities they want to do
Make the morning session more interactive

Interactive TV Items

Table TW-15. Percent of respondents who have been in a class or workshop that utilized interactive TV. (n=149)

Response	% of participants
yes	34.2
no	58.4
no response	7.4

Table TW-16. Respondents' perceptions of their interest and engagement in the I-TV segment of the workshop compared to a traditional workshop setting (i.e., with no interactive TV). (n=149)

Interest in the I-TV segment was...	% of participants
Less than in a traditional workshop	14.8
No different than in a traditional workshop	42.9
Greater than in a traditional workshop	33.6
no response	8.7

Table TW-17. Respondents' ratings of interactive TV as a means of making training available. Numbers are percent of respondents. (n=149)

Statement	Strongly disagree	Disagree	Agree	Strongly Agree	nr
The I-TV segment of the workshop was a satisfactory way to make training available in my region of the state.	2.0	7.4	37.6	42.9	10.1

JASON AT THE BELL MUSEUM SURVEY INSTRUMENT

Please help us evaluate today's activities. Your responses will remain anonymous. THANK YOU!

1. Today's date: _____

2. How many students do you have with you today? _____

3. What grade(s) are the students in? _____

4. In the table check the activities your students participated in and rate the educational quality of those activities.

Activity	Mark (x) below if your students participated in this activity	Rate the educational quality of the activity NA=did not participate 1=poor 2=fair 3=good 4=very good 5=excellent
JASON broadcast		
JASON exhibit		
Mission Discovery (at the University Aquatic Center)		
Bell Museum tour		

5. Did a guest expert speak to your students after the JASON broadcast? Circle one: YES NO

   If YES, rate the educational quality of the speaker's presentation. Circle one:

   poor fair good very good excellent

(turn to back side)

6. Activities in the Bell Museum auditorium today may have included the JASON broadcast, questions & answers with the JASON team, a guest expert following the broadcast, driving the ROV, and an ROV demonstration.

   Overall, how engaged were your students in these activities? Circle one:

   poorly engaged adequately engaged highly engaged

7. Overall, today's activities on the University of Minnesota campus were (circle one):

   poorly organized adequately organized very well organized

8. Please share any suggestions you have for improving the JASON Project experience at the Bell Museum.

JASON AT THE BELL MUSEUM TEACHER SURVEY RESULTS

Table JB-1. Number of surveys returned for each day.

Date	No. of surveys returned
March 16	7
March 17	6
March 20	7
March 23	4
March 24	6
March 25	4
TOTAL	34

Table JB-2. Number of students attending with each teacher.

Number of teachers that responded to this question	33
Minimum number of students	3
Maximum number of students	302
Mean	79.5
Total number of students	2624

Table JB-3. Number of student groups in each grade level.

Grades	No. of groups
K-4 only	4
5-8 only	23
9-12 only	0
K-4 & 5-8	5
K-4 & 9-12	1
no response	1

Table JB-4. Number of student groups that participated in JASON at the Bell Museum activities and quality ratings by the teachers that participated in the activities. Rating scale: 1=poor; 2=fair; 3= good; 4=very good; 5=excellent; x = mean rating.

Program	No. of groups	Quality rating (No. of participants)						
		1	2	3	4	5	x	(nr)
JASON broadcast	34	0	0	3	2	27	4.7	2
JASON exhibit	12	0	1	4	2	4	3.8	1
Mission Discovery (at the University Aquatic Center)	15	0	2	3	1	8	4.1	1
Bell Museum tour	14	0	2	4	4	4	3.7	-
Guest speaker	30	4	5	10	5	6	3.1	-

Table JB-5. Teachers' ratings of their students' level of engagement in the JASON at the Bell Museum activities.

Students' level of engagement	No. of teachers
Poorly engaged	0
Adequately engaged	13
Highly engaged	19
No response	2

Table JB-6. Teachers' ratings of the overall organization of the JASON at the Bell Museum activities

Level of organization	No. of teachers
Poorly organized	1
Adequately organized	6
Very well organized	24
No response	3

Free response items

Item: "Please share any suggestions you have for improving the JASON Project experience at the Bell Museum."

Positive comments

It was high tech enough to grab and keep the students' attention. Loved it. Thank you. Would have liked to have seen the scientists doing their experiments live.

Keep up the excellent work.

It was a great experience. Thanks.

Keep it up - the kids love it!

The program continues to be great. One comment: I really liked the ROV demonstration you have done in the past & I'm glad you continue to use it. It is a great way to get kids involved. Thank you!!

Rushed, but great.

I think you do a great job. Thanks.

We all agreed that this was the best JASON Bell Live and museum tour that our school has ever experienced.

Mixed comments and suggestions

Allow children to stand up & stretch before the speaker.

Less lunch time, more time in the touch room. Encourage teachers to take groups through the JASON exhibit. [written next to item 4]: There seemed to be plenty of time, but not according to your schedule-so we do not schedule this [JASON exhibit]-I wish we had-we had too much time for lunch.

Broadcast need[s] to [be] more organized.

Could all 4th graders be grouped together? My students were upset by the rude behavior of the upper grade students at the broadcast. (So was I.) Maybe teachers bringing classes need specific guidelines for behavior. Maybe each session of 1 hour was a bit too long for my 4th grade students. I think 45 min. sessions would have worked better.

The students would have been better focused if there was more variation in the

broadcasts from day to day or if we had not watched the satellite feed at school earlier in the week.

Our students created an exhibit for the JASON exhibit, but we were unable to schedule a tour. We were disappointed. I realize the space was small, but I would have liked some flexibility in working out a solution. Possible to see during our long lunch time? 45 minutes was more than ample time for lunch.

Lunch space was unorganized. We were led up many flights of stairs, down hallways, & back again One person should have checked it out and come back for us. Our school had one of the displays there - & we were not allowed to see it -- even though there were times no one was around. So my students were extremely disappointed.

Too expensive!!

Most guides were good - well informed and polite - one could have improved on his people skills - Bernard needs to learn if he [is] going to work with kids and people to get an attitude change. Other people were great. The tours were too short for what the kids were paying for - we barely got to see the museum. Better planning for next year.

Gear info to age of audience (ex. aquatic center, speaker) Following telepresence, do an "activity" to get kids physically involved (ex. 1997 broadcast). Telepresence is awesome. Why were many of the questions tot he researchers from one PIN site? In 4 years, we've had one student ask a ?. What's up? [written next too item 5]: spoke very highly of himself - Didn't really apply directly to JASON - spoke over the children's heads. Lost the interest of the kids fast.

[written next to item 4]: We were scheduled for museum tours at 11:20 after a 10:30 broadcast. We did not get our tours until approx. 11:50. We had to leave tours at 12:15 to go to a 12:30 Mission Discovery activity. I feel we should receive some compensation for the scheduling mistakes.

Scheduling at Aquatic Center not according to my contract schedule – students were not able to get the complete Mission Discovery program.

MINNESOTA IDEALS YEAR-END TEACHER SURVEY INSTRUMENT

Please help us evaluate the JASON Project by answering the following questions. Your responses will remain anonymous. THANK YOU!

Personal background

1. Public school: District name _____
   District # _____
   School name _____
   Private school: School name _____
2. What grade levels are taught in your building? _____
3. Your age: ___ <30 ___ 30-40 ___ 41-50 ___ 51-60 ___ 61+
4. Number of years you have been teaching (including this year) _____

MN IDEALS teacher workshop

5. *Indicate your degree of agreement with the following:*

   I was well prepared by the Minnesota IDEALS teacher workshop to use the JASON Project curriculum in my classroom. Circle one:

   strongly disagree disagree agree strongly agree

6. Based on your classroom experiences with the JASON Project this year, what was the most helpful aspect of the Minnesota IDEALS teacher workshop?

Use of the JASON Project curriculum

(Estimates for questions 7-9 are fine.)

7. How many teachers in your building attended a JASON Project workshop this year?____
8. How many teachers in your building used some part of the JASON Project curriculum this year? _____
9. How many students in your classroom were exposed to some part of the JASON Project curriculum this year? _____

10. In the table: 1) indicate how often you used each curriculum component, and
2) rate the effectiveness of each component in promoting student learning.

Curriculum component	(1) How often did you use it <u>this year</u>? 1 = never 2 = 1- 5 times 3 = 6-10 times 4 = more than 10 times ? = not familiar with this item	(2) Rate its effectiveness in promoting student learning. 1 = poor 2 = fair 3 = good 4 = very good 5 = excellent (blank = didn't use it)
JASON IX written curriculum		
JASON@school internet/CD-ROM		
JASON homepage		
JASON Part I Video		
JASON Winter Updates: Test Programs Video		
JASON broadcasts: 1 hour features		
JASON broadcasts: 20 minute daily updates		
Bell Museum minikits		
Utilized a community resource person*		

* If you used community resource persons please describe who they were and what they did (eg., answered your questions, visited your classroom):

11. How did you get access to the March 16-27 JASON Project broadcasts? (Check all that apply)

_____ I did not use any of the broadcasts

_____ Viewed broadcasts at the Bell Museum

_____ Satellite transmission to my classroom

_____ Used a public cable television channel (cable company: _____)

_____ School district local cable network into my classroom

_____ Used an interactive-television classroom site (network used: _____)

_____ Used a videotape of broadcasts

_____ Other: _____

_____ I used the broadcasts, but I do not know how they were obtained

12. If you used the JASON broadcasts (March 16-27), please describe how convenient or difficult it was to obtain the broadcasts.

13. Do you expect to use next year's JASON Project curriculum? Circle one:

YES NO

If NO, please explain why:

Performance Packages – Minnesota Graduation Standards

Complete this section only if you used or examined a Bell Museum JASON Project Performance Package. Otherwise, please skip to page 5.

14. How did you obtain the JASON Project Performance Package(s)?

_____ In the mail from the Bell Museum

_____ Downloaded from the MN IDEALS website

_____ Other: _____

15. In the table: 1) check the Performance Packages you used or examined, and
2) rate the quality of the Packages you used or examined.

Bell Museum JASON Project Performance Packages	(1) Check the packages you used or examined	(2) Quality rating 1 = poor 2 = fair 3 = good 4 = very good 5 = excellent
Intermediate level: Inquiry		
Intermediate level: Science		
Middle level: Inquiry		
Middle level: Life science		
Middle level: Earth science		

16. Suggest modifications you believe should be made to the Performance Packages you used or examined. {Identify the Package(s).}

17. How can the MN IDEALS staff better help you to meet the requirements of the Minnesota Graduation Standards?

Assistance from Mentor Teachers and Bell Museum staff

18. In the table: 1) indicate how many times this year you contacted a MN IDEALS Mentor Teacher or a Bell Museum staff member for assistance with the JASON Project, and 2) describe the help you needed and what you received.

Source of assistance	(1) Number of contacts 1 = none 2 = 1-2 3 = 3 or more	(2) Describe the help you needed and what you received.
Mentor Teacher		
Bell Museum staff		

Use of the Internet

19. How frequently did you use the MN IDEALS website this year? (Circle one)

never 1- 5 times 6-10 times more than 10 times

20. If you used the MN IDEALS website, check all the sections you used:

_____ How to contact the MN IDEALS staff
_____ How to contact mentor teachers
_____ Information on Minnesota teacher argonauts
_____ Information on Minnesota student argonauts
_____ Performance Packages
_____ Minnesota JASON Project teachers
_____ Teacher workshop pictures
_____ Other: _____

21. Do you have suggestions for improving the MN IDEALS website?

22. Did you or your students use the JASON Project homepage or JASON@School on the Internet? Circle one: YES NO

23. Did your students use the Internet to locate information on topics related to the JASON Project? Circle one: YES NO

If YES, please give an example of how your students used the Internet to locate information.

24. Did you and your students create your own Internet homepage?
Circle one: YES NO

If YES, what is the address (the URL)? _____

Additional comments

25. Please share any comments you have concerning the JASON Project, including any problems you have had using it.

MINNESOTA IDEALS YEAR-END TEACHER SURVEY RESULTS

Table YE-1. Grades taught in the respondents' school buildings. (n=126)

Grades taught	% of respondents
K-4	7.1
5-8	14.3
9-12	5.6
K-4 & 5-8	48.4
5-8 & 9-12	9.5
K-12	10.3
no response	4.8

Table YE-2. The age of the respondents. (n=126)

Age	% of respondents
less than 30	15.9
30-40	34.1
41-50	33.3
51-60	12.7
61+	0.8
no response	3.2

Table YE-3. Respondents' years of teaching experience. (n=126)

Years of teaching	% of respondents
1-5	37.3
6-10	20.6
11-20	18.2
21 or more	19.8
no response	4.0

Table YE-4. Respondents' ratings of how well they were prepared by the Minnesota IDEALS teacher workshop to use the JASON curriculum. Rating scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree; nr=no response.

Statement	Response (%)					Mean rating (n)
	1	2	3	4	nr	
I was well prepared by the Minnesota IDEALS teacher workshop to use the JASON Project curriculum in my classroom.	4.0	11.1	59.5	24.6	0.8	3.1 (125)

Table YE-5. The most helpful aspects of the Minnesota IDEALS teacher workshops. (n=126)

Aspect of the workshop	% of respondents
Hands-on activities and poster sessions	54.2
Receiving and reviewing the JASON curriculum	29.2
Using computers	11.7
Meeting other teachers	5.0
General information on teaching resources	4.2
The field study	3.3
General information on the JASON Project	3.3
Guest speakers	3.3
Other	10.0
No response	5.0

Table YE-6. Respondents' ratings of how frequently they used components of the JASON curriculum and the effectiveness of those components in promoting student learning. (n=126)

JASON IX curriculum component	No. of times used in 1997-98 school year 1 = never 2 = 1- 5 times 3 = 6-10 times 4 = more than 10 times nr = no response x = mean frequency % of participants						Effectiveness in promoting student learning 1 = poor 2 = fair 3 = good 4 = very good 5 = excellent nr = no response x = mean effectiveness rating % of participants						
	1	2	3	4	nr	x	1	2	3	4	5	nr	x
Written curriculum	2.4	20.6	23.0	51.6	2.4	3.3	0.0	5.6	27.0	38.1	23.0	6.4	3.8
Homepage	21.4	32.5	11.1	25.4	9.5	2.4	4.8	11.1	23.0	19.8	5.6	35.7	3.2
JASON@school internet/CD-ROM	28.6	30.2	8.7	19.0	13.5	2.2	4.0	7.2	19.8	14.3	11.9	42.9	3.4
Part I Video	15.8	68.2	4.8	3.2	7.9	1.9	0.8	3.2	27.8	26.2	17.5	24.6	3.8
Broadcasts: 1 hour	26.2	55.6	3.2	2.4	12.7	1.8	0.8	6.3	11.9	20.6	23.8	36.5	3.9
Bell Museum minikits	51.6	35.7	2.4	0.0	10.3	1.4	0.0	1.6	15.9	11.9	7.9	62.7	3.7
Community resource person*	46.8	20.6	.80	1.6	30.2	1.4	1.6	0.0	4.2	8.7	8.7	77.0	4.0
Winter Updates: Test Programs Video	54.0	13.5	0.8	0.0	31.7	1.2	3.2	4.0	7.1	1.6	0.8	83.3	2.6
Broadcasts: 20 minute daily updates	63.5	13.5	1.6	.80	20.6	1.2	0.8	1.6	5.6	4.8	4.0	83.3	3.6

*Table YE-6 (con't.). Respondents' descriptions of the community resource persons:

Interstate Power representative
Solid waste officer
wastewater treatment plant
Hormel Research and Development
Food technology teacher

DNR - gave us information to supplement the study of Eurasian millfoil and zebra mussels to develop the local water study.

James Kapsh - brought in SCUBA equipment and talked to us about how to use it. He also talked to us about submarines!
Mark Johnson - Minnesota fisherman. Taught us how to fish.

SCUBA diver - shared equipment and experiences.
SCUBA diver/snorkler - shared slides and experiences.

Assisted with field study. Many people. Got contacts from teacher training session.

Student teacher (college); ideas, assistance w/teaching.
High school students - assisted w/teaching.

I accesses these [resource persons], but did not use them with students.

Parents who SCUBA dive gave info about diving and ocean structures.
DNR person talked about river invertebrates.
Parents helped with aquatic study.

Watershed district water specialist talked a bout monitoring water quality. This was in preparation for doing our aquatic sampling which we have yet to do. The ice was never safe enough to do a winter sample.

Went to the video "The Deep" after studying kelp forests with JASON materials. It was an awesome addition.

Tom Ahlberg - helped get together things for the aquatic study. He brought in sediment samples from the lake when we couldn't get on the ice. He talked about what is needed to live on a lake. He is a soil consultant for farmers.
Dennis Appel - Water treatment and sanitation - gave us a jar to test dissolved oxygen.

Janice Batchellor - Community college teacher - she was going to use her college class to help us with the aquatic field study on the ice but the ice thawed in the middle of Feb. - El Nino. We will try when the ice is out.

BSU university professor - answered questions.

Answered questions, UMC - brought broadcast to us.

Elsie, Amy, Katie} Bell

An aquarium store owner visited our class and showed us how to set up an aquarium.

Elm Creek Park Reserve personnel answered questions.

Will this summer.

I had a puppeteer and a poet work with my classroom. Students researched an ocean animal. They created a poem about it; they created an "ocean" cardboard box theater and cardboard/wire handle animal puppets to present each poem to an audience.

We had 2 artists-in-residence that worked with us on our Nonsuch Island display.

We visited a nearby nature center and did the water testing section. It was excellent.

Coon Rapids Dam Regional Park - water testing field trip.

Parents/equipment and technical help.

Coon Rapids Dam - aquatic study

A DNR Representative presented a 45 minute talk on Aquatic Exotics, with many handouts available about water and plants.

Tom Ahlberg (self-employed) - discussed water quality of area lakes.
Minnesota West College - A college class with their professor had planned to help us on Lake Okabena to do the filed aquatic study! They were going to set up the stations on the ice on the lake! The weather didn't allow us to do this. We'll do it from shore later this spring!

Tom Ahlberg - answered questions, visited classroom, helped with aquatic field study.

Table YE-7. How respondents obtained access to the JASON broadcasts (March 16-27, 1998). Some respondents checked more than one item. (n=126)

How broadcasts were obtained	% of respondents
Viewed broadcasts at the Bell Museum	50.8
Did not use any of the broadcasts	19.8
Used a videotape of broadcasts	18.2
Used an interactive-television classroom site	11.1
School district local cable network into classroom	6.3
Used a public cable television channel	4.8
Used the broadcasts, but do not know how they were obtained	3.3
Don't know how broadcasts were obtained	3.2
Satellite transmission into classroom	1.6
Other: 1) from another school; 2) live off the Internet	4.8

Table YE-8. Difficulties receiving the JASON broadcasts (March 16-27)

Types of difficulties	No. of respondents
No difficulties	38
Technology; accessing/decoding the signal	36
Logistical; scheduling rooms; travel to another site	6
no response/ not applicable	46

Table YE-9. Percent of respondents planning to use the JASON Project curriculum in 1998-99. (n=126)

	% of respondents		
	yes	no	nr
Will use next year's JASON curriculum	80.2	13.5*	6.4

*Most frequent reasons for not using JASON in the future: 1) No or difficult access to the broadcasts, 2) JASON curriculum not appropriate for the grade level, 3) lack of funding, 4) JASON topic does not fit with established curriculum.

Table YE-10. How respondents who used or examined a Bell Museum JASON Project Performance Package obtained a copy of the Package.

How Performance Package was obtained	No. of respondents
Downloaded from the MN IDEALS website	10
In the mail from the Bell Museum	7
Other: from a friend	1

Table YE-11. Number of respondents who used or examined a Bell Museum JASON Project Performance Package and their ratings of the Packages' quality.

Performance Packages	Used or examined a Package No. of respondents	Quality of the Package 1 = poor 2 = fair 3 = good 4 = very good 5 = excellent nr = no response x = mean quality rating No. of respondents						
		1	2	3	4	5	nr	x
Intermediate level: Inquiry	4	0	1	0	2	1	-	3.7
Intermediate level: Science	1	0	0	0	1	0	-	4.0
Middle level: Inquiry	7	0	0	3	2	0	2	3.4
Middle level: Life science	5	0	0	1	3	0	1	3.7
Middle level: Earth science	2	0	0	0	1	0	1	4.0

Free response items

Item: Suggest modifications you believe should be made in the Performance Packages you used or examined.

> The food web/food chain package --> the descriptions with each animal were confusing for the students, ie. there was not a picture of plankton, I had to modify the package a little.
>
> The aquatic study requirements was difficult to accomplish in climates this far north. Need to suggest in the package alternatives to some of these requirements.

Looks good. No problems.

Intermediate level inquiry - level of activities was high for our 5th graders, esp. difficult to get them to develop questions.

They need "choices", e.g. not all schools can take students outside.

Item: How can the MN IDEALS staff better help you to meet the requirements of the Minnesota Graduation Standards?

Provide examples of student work at the workshop!

Perhaps answering the questions on the Teachers' Forum on the JASON homepage would be a good place to start.

Keep making the performance packages. Fine tune them & ask the teachers who use them. They know!

Continue to provide excellent curriculum and produce more performance packages!

Doing different Perf. Pkg. each year for Inquiry with JASON will be difficult. Can some parts be the same? Or can we get a training session or question/answer session for each year's perf pkg? Also a one page stepwise overview would help or a graphic organizer of the package.

Workshops.

We just matched what we did to the outline of Grad. Standards our district & school is using. It fits in great. We are learning that of what we are teaching works under a standard then that becomes the performance package. We need to measure the success of students with it and date it.

Walk thru a pkg @ inservice.

More than one workshop - one at the start of the year and one about 2 months into JASON to troubleshoot.

Show how "JASON IDEALS" can be substituted for other pkgs.

Publish an addendum to the JASON curriculum that correlates MGS to lessons.

Table YE-12. How frequently teachers sought assistance from Mentor Teachers and the Bell Museum staff and the nature of help they requested. (n=126)

Source of assistance	Number of contacts 1 = none 2 = 1-2 3 = 3 or more nr = no response x = mean no. of contacts No. of respondents					Nature of help requested by teachers No. of respondents
	1	2	3	nr	x	
Mentor Teacher	68	11	7	40	1.3	Advice concerning curriculum ..... 10 Accessing/debugging broadcasts ..... 5 Computers/JASON@school. ..... 3 JASON Club ..... 1 Teacher workshops 1
Bell Museum staff	56	20	32	18	1.8	Accessing/debugging broadcasts ..... 20 JASON@school CD-ROM ..... 12 Visit to Bell ..... 9 Advice concerning curriculum ..... 8 Creating JASON exhibit ..... 3 Scholarships ..... 4 Teacher workshops ..... 2 Student argonaut application ..... 2 JASON Club ..... 1 Performance Packages ..... 1 Finding guest speakers 1

Table YE-13. How frequently respondents used the MN IDEALS website during the 1997-98 school year. (n=126)

Number of times the MN IDEALS website was used	% of respondents
never	41.3
1-5 times	41.3
6-10	9.5
more than 10	5.6
no response	2.4

Table YE-14. Sections of the MN IDEALS website used by JASON Project teachers. (n=126)

Sections of the MN IDEALS website	% of respondents who used this section
Information on Minnesota teacher argonauts	33.3
Information on Minnesota student argonauts	32.5
Minnesota JASON Project teachers	19.0
Teacher workshop pictures	17.5
How to contact the MN IDEALS staff	15.1
Performance Packages	12.7
How to contact mentor teachers	10.3
Other: Just to see what's up; Projects; General information; Just looked around; Other websites that would be helpful; Calendar/updates	7.2

Free response item: Do you have suggestions for improving the MN IDEALS website?

Make it simple, we are computer stupid!!

Have performance packages accessible earlier!

Good!

I need convenient computer access–only 1 in building.

Yes, help us get more computers connected tot he Internet!

No, it was great!

I'm not experienced enough with the website to make suggestions.

No. [four responses]

Not at the present.

Maybe include more help or directions for those who aren't as computer literate - directions on how to access information or exit specific areas of a page - our technology person was even confused about several of the areas - how to access and exit.

I think it is excellent!

Keep informing teachers that website is available as a resource & networking aid. Please help classroom teachers in this area [performance packages] once grad rule becomes operational.

I needed a loner computer training session, but also appreciate I could call later for technical support.

Help learning how to use the website and CD-ROM.

Have dates of JASON live events posted.

At some places a "password" is needed. [frowning face]

I would benefit from ideas for using these materials with grade 4-5 students.

Have all the different locations or resources listed on one page.

Could website access be achieved <u>at</u> the Bell Museum? A room set aside on particular days or times?

Beef up the academic level to senior high.

Table YE-15. Respondents' use of the Internet. (n=126)

Question	% of respondents yes	no	nr
22. Did you or your students use the JASON Project homepage or JASON@School on the Internet?	71.4	25.4	3.2
23. Did your students use the Internet to locate information on topics related to the JASON Project?	59.5	35.7	4.8
24. Did you and your students create your own Internet homepage?	5.6*	87.3	7.1

*No URLs were reported

Table YE-16. Respondents' examples of how students used the Internet to locate information. (n=126)

Student uses of the Internet	% of respondents
Information on organisms	17.5
Research for reports/posters	17.5
JASON@school/JASON homepage	7.9
General browsing	6.3
Monterey Bay Aquarium	5.5
El Nino	4.0
Chat sessions (scientists and novel)	4.0
Project Stardust; comets	2.4
NOAA/NASA site	1.6
Submarines, ships, boats	1.6
Seaworld; Bermuda Biol. Station; Nonsuch Island; Guyamas Basin; DNR sites; Hennepin Co. Library; Bell Museum	each < 1.0

Free response item: Please share any comments you have concerning the JASON Project, including any problems you have had using it.

Positive comments

> The JASON Project is very worthwhile. The students get excited about it. We use it cross-curriculum. We read the book "20,000 Leagues" and discussed it. We did some experiments and learned much from the JASON book. I copied pages for them to read at home and then we discussed them. It is very

adaptable to many different teaching situations We have also incorporated field trips into the program. Thank you!

Great project - I would like to get copies of the past projects for our science lib. Please let me know how to do this and the cost involved. Thanks - keep me on all mailing lists - I want to stay involved!

Always enjoy working with JASON project. It has fresh topics every year. Keep it up!

I thought the curriculum was excellent and very easy to follow along with. The information was also enjoyable and easy to adapt into my classroom.

No problems. Thanks for supplying us with some of the best educational technology and science information we've received in a long time.

We will be concentrating on water/ecology studies this spring. It just seems to be a better fit for water sampling then [?] macroinvertebrates, and other ecological aspects.

Absolutely loved it. Especially in the time of transition to the Minnesota standards, it provided an exciting venue for inquiry learning!

Good science.

Phil (12 yrs.) acted as mentor for a new JASON student and together they functioned as independent learners. His JASON training served him well in that it gave him a mental map of JASON IX and an intro to new resources. It also allowed him to skim the curriculum to select appropriate materials and by-pass what he already knew. Phil will be back next year; so will I.

Please continue to offer the JASON Project at the Bell Museum. It is our science curriculum. I can not imagine using anything else.

Great!

This was a wonderful project, I was impressed with the parts I was able to do. Wish I would have had more time to spend on it. I would like to try it again in the fall.

As a student teacher and a newcomer to the JASON Project, I felt that the workshop gave me great ideas for my future teaching. I will be sure to incorporate it in my own curriculum.

The teacher workshop and live broadcasts are excellent! Particularly good in the teacher workshop were the hands-on activities: poster making, etc.

Bell Museum (you) have helped provide an excellent interactive learning Project!

Great telecast this year as well as exhibits done by students on display. Enjoyed the interactive tour of the exhibits. Children really liked "Jeopardy" game and tour. Broadcast was best coordinated at Museum. Appreciate the interdisciplinary, cross-curriculum ideas in workshop materials. Fantastic efforts by all involved. Thank you for such a unique experience.

I loved it!

JASON Project continues to be a major event for our students in the middle school. This year I was able to focus on the ROVs, the kelp forest, and coral reefs. The Mission Discovery with an ROV in the swimming pool really added a fascinating dimension from which my students created their own models of ROVs. Since the movie, "Titanic" was so popular this year, most of my students saw the Alvin ROV discovering the sunken ship and were very interested in many of the aspects of underwater research/discoveries. My biggest problem is trying to find adequate time to use more of the curriculum and Internet possibilities.

It was a great experience. Looking forward to next year and the rainforest! Thanks.

<u>Mixed comments and suggestions</u>

I enjoyed the help and hope to plug into it in future years. I hope the transmission problem is solved (3/20 and on we couldn't receive it). Fine tuning the volume control also needs to be done. Suggestions - Written outline of the underwater coverage.

Our computers are slow, causing problems. I should've called someone but didn't because we are soon moving to another school site.

I think you have enough information to realize I was frustrated.

Need activities appropriate for grades 3 & 4 pointed out - I spent a lot of time trying to convince other 3 & 4 teachers that the written curriculum could be done at that level - ended up doing myself for all grade 4 students - couldn't get other 3rds into my schedule.

The only problem I had was with aquatic field study. I couldn't get my data back or compare to other specific locations. This has been an adventure of a lifetime. I can not thank you enough for all you have done for me. I hope I didn't embarrass the Bell too much. My school administration is hooked. It

wouldn't have been possible without all the network effort you guys did.

The major problem our school has is the lack of internet-connected computers. We only have 4 for the entire school. Therefore time to use them is extremely limited.

In the future I think I would use this as an enrichment project. I took a while for the students to all get on the internet. A lot of frustration for them.

It was very hard to get and schedule in all the students to all the live broadcasts. Then to decide which should be the ones to watch.

The dates and time of the March 16-27 broadcasts were not publicized very well. I had to modify a lot of the curriculum to 5th grade level. I enjoyed JASON a lot and am looking forward to JASON X. The rain forest will fit into my existing curriculum very well.

The time of the year was my main problem. Could we look at closer to spring? The curriculum was excellent. I enjoyed the literature sections. We found the math opportunities were there - with graphing data, etc. All of the hands-on experiment ideas are always the best. Students want to be as involved as possible. I had three students collect water data in ice holes in February.

We were introduced to this material quite late in the year so we just scratched the surface - would like to see the "Rain Forest" material earlier .

The workshop needs to be at the start of the year so project info can be included throughout the year.

I would have liked to make more use of JASON@school etc, but limited availability of internet access made it difficult. Unfortunately all schools are not technologically equal.

The CD-ROM and digital transmissions were big problems. I hope JASON will just go straight internet next year to allow better access for more people.

The curriculum needs to be available in August for teachers. This could be a theme for the whole year. Getting materials in Jan. is too late. It is so time consuming getting materials together for activities and expensive. Come up with more activities that require less materials and prep time.

I was very impressed. The only change I would like to see is help adapting some of the lessons for lower grades (4th). The students did very well and really enjoyed the activities. There were so many great ideas.

I enjoy using JASON because I learn so much right with my class. I wish the questions on the live broadcast could be screened more. I would like to see higher level questions.

We have used for 4 or 5 years, but I find it difficult to get some of the materials and adapt to 4th grade.

I continue to be a huge fan and believer of the JASON Project. I was frustrated this year - but it had more to do with my situation (brand new school, waiting for construction etc. to be finished) rather than JASON itself. I feel like I've done the least amount of teaching at broadcast time - but the broadcast really got kids excited. We will continue to use the curriculum until the end of the year. (I hope JASON@school continues.) I continue to believe JASON is an incredible way to teach science! Thanks!

Rather than come to the Bell for a live broadcast as we have in the past, we choose to go to the IMAX theater at the zoo and see "Into the Deep." We did this because we thought we were going to be able to see the live broadcasts via cable. (And we knew we could not afford to go on both field trips) So we were very disappointed when we could not get the live broadcasts. If these things could be arranged through our media/technology specialists in our schools, rather then through individual teachers, things would be a lot more user friendly. With all that we teach each day, we do not have time to pursue this piece of the project.

I would have enjoyed having more variety on the broadcasts. Having them over spring break was a bummer because we missed out. The live broadcast at the museum was THE BEST!

I liked the format of the printed curriculum much better this year. Would help to have curriculum and training available sooner in the school year.

I thought the JASON Project went very well. The only thing I will change next year is I will not watch it all week because there was too much repeated material form day to day. Some I know was exactly per word the same as a previous day. Therefore I question if the entire broadcast is live??

The topics need to be greatly modified for early middle school students. More connections need to be made to everyday life in MN and the environment explored. The "Underwater Cafe" was a good resource for doing this.

I really enjoyed the curriculum, however, it would be very useful to have the training sessions earlier in the school year if possible. Some of the activities needed to be modified and were too advanced for 7th grade students. Thanks for helping us have a positive learning experience.

I like the curriculum. The telecast could be improved. More of the important scientists should represent the diversity of cultural backgrounds from which scientists originate and represent the diversity of the students who view the telecast.

The project is great and both students and parents have been enthusiastic about it every year I have used it (the past 6). Unfortunately, our school year is too short to explore the curriculum as thoroughly as both my students and I would like. We also lost most of 4-1/2 weeks to testing this year (standardized). This makes it difficult to "fit in" as much of the curriculum as we have in the past.

This year I didn't use as much of the JASON material because I spent 6-7 weeks doing the play 20,000 Leagues Under the Sea with 3 different classrooms. I would have tried to use the CD-ROM and homepage. There just wasn't enough time.

We wanted to do a lot of these things, but just not a lot of time to do so. I hope the web site will be up all year so we can maybe do some of the things we missed.

I used JASON for gifted and talented student. Very basic and broad. Had to expand upon the basic curriculum. Also missed chats and broadcasts because of times (I had to teach other classes at the time) so student had to do a lot on own. I also haven't had the time to really look at JASON or MN IDEALS websites. There is no support for JASON from administration and I have given up my prep time in order to teach this student using JASON.

The curriculum had some levels of difficulty that was not necessary. Did we really have to have students convert from leagues to meters and F to C to compare historical ocean temp. w/current temp. Some of the graphing activities had incredibly small scales. Overall it wasn't very teacher friendly - hard to find materials info and too many glitches often discovered in the middle of teaching the lesson.

Because it went from analog to digital?? whatever that means. Two cable companies in the area could not connect. I had cable installed in our school for this and it was frustrating not to be able to receive it. Are there any ways to get a copy of taped transmissions. Bell live was good - Honeywell speaker was a waste of time & it made us late to ROV so students couldn't run ROV as promised.

I wish I had time to visit w/other teachers about what worked best for them - specifics of what to do or not - depending on grade level etc.

I am not qualified to comment on most of the questions. I am currently only a student teacher and also will be teaching high school. I taught elementary school for five years during 1986-1991 in L.A. so I have not used JASON Project in any classroom so far. The training was good and the live broadcast was very good too but may be not so useful in high school classroom.

It is a fantastic curriculum. Everything is reinforced in several ways either by internet, videos, live broadcasts, research articles and hands on investigations. Kids are excited using it. The only problem I had was gathering materials for investigations. This took a lot of time & searching for some things like oxygen tablets & kelp.

I'd like to have access to the satellite programs. Amy gave me public school names to use, but I met a dead end there. I contacted the public school teachers who were using JASON and they said they "Didn't have time" to set up the taping of the winter up-dates etc. So we couldn't use that part. Otherwise the Bell Museum staff did a tremendous job of supporting me in the classroom!

We didn't pursue the JASON Project in great depth this year, mostly because we had already planned some other time-consuming unit before I heard of JASON! However, after we obtained internet access in Dec. we "dived" in and plan to carry out the stream study in our creek next month. The curriculum material is <u>great</u> - slightly confusing to the first-year user mostly due to <u>quantity</u>! It met the needs of my children who have very different learning styles due to the great variety of activities and interdisciplinary approach. Our day at the Bell Museum was wonderful. The only note to share with you is that from a homeschooler's pt. of view it would be better to put us (<u>only</u> if possible and easy) with a group of similar aged school kids for the tours. (My 14-yr. old was answering all the guide's questions because we toured w/a group of 3rd graders.) (It was a little awkward and I think the other teachers was annoyed!)

If we decide to do JASON next year we will get involved with a group of homeschoolers, or take advantage of the JASON'S kids club to keep us more actively involved. Also, when doing the field tests (experiments) it was not enjoyable because the curriculum came in the fall. It would have been much more interesting, effective if we'd started the field work in the summertime. Too cold! Broadcast input: The live via satellite idea sounded interesting enough however, in reality, it was difficult to hear especially when the divers were underwater and the questions incoming. Mission Discovery: Excellent!! We got to pilot the ROV!!

This year's curriculum was much more streamlined and approachable. Last year's was overwhelming! I would make the following change - make sure all information of an activity is together. It's confusing to find part of the

instructions in one section and the discussion questions in another.

The experiments did not always work. Next year I plan to have a moderately stocked laboratory. I really enjoyed the literature tie-ins. There could have been more suggestions of using 20,000 Leagues Under the Sea. Our family found a restored text and read every chapter. The geographical and scientific information learned was phenomenal. It has been years since my college chem and physics labs. I feel I need a primer on correct lab techniques.

This has been my second year with JASON. It still is somewhat overwhelming. I personally could use a few teacher training days. I work with several grades at once and need to make it understandable for several levels, and myself. I'm learning how to work through the curriculum. But I spent $10 to tab all the sections. Even as well as I know some of the sections; pages get 'lost'! The teacher training was very helpful to get a handle on JASON. Thank you for working with the homeschoolers. We are a growing group. We need help with JASON and making it work in smaller situations. Bell has been a positive experience for me (us). Thanks for the great work. PS. There is so much, internet, websites, JASON@school, etc. that you could be on the computer full time!! Always afraid I might miss something; major time consumer!

Although my child is still a bit young to fully use the curriculum, we fully enjoyed it and look forward to next year.

At times it was overwhelming for my 3rd-grader and me. I think next year will be better.

Next year I hope to have the time to utilize the project more.

The schedule was horrible (the second week was during our spring break). The amount of effort needed to tap into your technology was ridiculous. Most materials are not appropriate for elementary school children. The trip to the Bell Museum was really not worthwhile and very expensive. I would have liked to do the water study but in MN in Nov. Dec, etc? Also you are assuming that teachers have the materials & expertise to deal with all the experiments, technology, etc. - most do not. Live broadcasts were too much the same!!!

With 4th graders JASON was more of an exposure experience. They learned a lot about Monterey Bay, kelp beds, Bermuda, coral reefs, ocean levels, plants and animals of the sea but much of the technology was beyond them.

I really did not use the JASON Project much this year.

Teacher introduction should be doe earlier in the year. This year's workshop

was 1/2 way through the school year. Implementation should be done earlier.

Wish the workshop was only 1/2 day instead of all day. Nov/December are such busy months it would be better to have only 1/2 day. Though it could possibly be held during the week?

It would be nice to have the workshop focus on a curriculum format vs a taste of this and that.

Update the material.

I would like more time in the workshop to make any "scientific tools" that are needed in the curriculum and more time to go through some preselected "core" lessons. I always enjoy the workshop day.

The curriculum didn't seem to have as much hands-on opportunities as the previous year. Confusion about Guaymas Basin, not being a part of the basic curriculum or telepresence. ROV presenter not well received by the kids and parents in our group. Liked the flexibility of curriculum. Can take out whatever part you want. Can be used by a large age range of kids. Like being able to access curriculum even though not a traditional school unit.

Figure out the broadcasts to be able to view in our classroom.

Always very interesting topics. A lot of good activities to use with students. Always find it difficult to integrate into curriculum. I always feel I am not doing something in my curriculum because I am doing the JASON Project. We only do the JASON Project for two weeks which I do not feel is enough time for the student to learn what it is all about.

As mentioned before many of the new/student teachers attending the special workshop would benefit from information about how to present this project to grade 4-5 students.

I honestly just did not use the JASON curriculum. We never got the broadcasts and the written curriculum was too hard for 4th grade. I had good intentions, but it just didn't work for me.

The most frustrating part of using the JASON Project was not being able to use/receive the broadcasts. The kids were really disappointed after going through the material on Monterey Bay, Bermuda, etc. and then not being able to get the broadcasts.

Difficult to photocopy curriculum with grey headings and footers on page, came out black and made copy machine jam. Frustrating to use JASON

homepage, too many additional programs to install, used up all of my memory & still didn't work. Initial JASON broadcast's audio was so poor that we could not hear anything being said.

Wish I had had more time to use the project.

Really impressed and how to use again next year. Problems - unable to access broadcasts or obtain taped videos of broadcasts.

Need team time and $ to implement. There are many things to buy to help use this project and a lot to organize.

We could not access any of the cable broadcasts and many of our computers didn't operate correctly. We visited Bell Live and did selected portions of the JASON curriculum. We have our own science curriculum so we use JASON as an additional science resource. We do not have time to do as much with the curriculum as we'd like to. It always has so much to offer.

The way the curriculum is organized doesn't appear, to me, to be very user friendly. I feel that I waste a lot of time plowing through stuff I don't need (at least at that particular time) looking for the parts I really want to use. It seems to jump around a lot, giving you bits and pieces in several different places for one topic/idea. The workshop walk thru helped, but still its organization is cumbersome. Also, it would be helpful if experiments were more conclusive from the teaching point of view (i.e. if your experiment goes wrong, what were you supposed to get from it?) More often than not I found the curriculum to be a good starting point (foundation for ideas), giving thought direction, and thematic use of the topic. However, I usually used other resources (ie van Cleave's "Oceans for Every Kid" or "Magic School Bus-Ocean Floor" science/literature unit) to actually implement learning.

Sites listed were not able to be accessed or were not running. When a website is not working does your staff or others post that on the homepage? It was disappointing this year not to be able to access the JASON activities like last year from the library computers - Is there a way to access, using the libraries, next year?

I had 3rd graders who seemed uninterested in the theme for JASON.

Need curriculum sooner. Perhaps some of the activities that require lots of equip (water temp, flowing water) that is not available to elementary schools could be offered in nearby locations during broadcast dates...I'd prefer that to touring the museum. Students (5th graders) need active involvement to make this visit more meaningful. Instead of making the JASON exhibit a tour - let everyone walk through! - or do both, but I gained a lot by taking a 5 min, journey - we couldn't afford the extra to take the kids through - I wish

they had seen it...it was better than the museum stuff.

The Jason@school CD-ROM was very difficult to download. We didn't get very good at using it. In general, I like the written curriculum and activities. The training workshop for homeschoolers was pretty good. The history of JASON and other info regarding the program in general could (& should) be eliminated to allow for more time in training. (The general info could be disseminated in written form). We have attended the JASON broadcast for 2 years now & we've never had a question answered from our auditorium group. This year many questions were answered from only 2 or 3 sites (ie. 10 questions/sight). Why not 2 or 3 questions from 10 sites? I find the JASON staff to be very friendly, helpful, and hardworking.

We had difficulty getting the CD-ROM for JASON@school in the beginning. We started late because of this. We love JASON. It really fits with our MN Grad. Standards. We are looking forward to next year! Thanks much!

No computer with CD-ROM. Not enough time to dedicate to it.

My students are grades 7-12, but many are low functioning. For the students that are at their grade level [I] felt they were over-prepared for the program March 26. During the JASON Expedition, my students at grade level asked questions to the guide (but he didn't know the answers). I understand the JASON Project is for grades 4-8 - so I may consider not going to the exhibits next year. I had no problems using the materials or computer for the project. I appreciate all the effort, time and money spent for the JASON Project! When asking U my students how they liked it, there was an overwhelming YES! The program was totally organized and there was no problem going form location to location. Thanks for to ALL of you from the Anoka County Juvenile Center!

Couldn't get anything from our CD.